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**For the Love of Order and the Sense of Beauty:
Denman Waldo Ross and His Theory of Pure Design**

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**For the Love of Order and the Sense of Beauty:
Denman Waldo Ross and His Theory of Pure Design**

by

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Dedication

To my grandpa, Donald Debner.

Though he isn't here to see me graduate, I know he is proud of me.

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Abstract

For the Love of Order and the Sense of Beauty: Denman Waldo Ross and His Theory of Pure Design

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This study investigated the work of design theorist Denman Waldo Ross and his theory of “pure design.” During the early twentieth century, Ross delivered lectures, published articles and books, and mused endlessly on the subject of art and design pedagogy. He taught future architects, designers, and art teachers at Harvard University, and acted as a patron to artists and art theorists. He also served on numerous boards and panels, helping to govern the Boston public schools, the Museum of Fine Arts, Boston, and the Academy of Arts and Sciences, among others. His work is not widely known today, but it was influential during a critical moment in American art education history. Arthur Wesley Dow is often credited as initiator of the elements and principles of design—an unfair burden for him to bear. Denman Waldo Ross, too, participated in the development of the language and terminology related to the elements and principles of design in the canon of art education at the turn of the twentieth century.

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Chapter 1: Introduction

INTRODUCTION TO THE STUDY

If our aim is to spread the Love of Order and the Sense of Beauty, we must be sure that everybody has a chance to get to it, in the one and only way, by the exercise of his own judgment. (Ross, n.d. d)

“The Love of Order and the Sense of Beauty.” Again and again, Denman Waldo Ross proclaimed this phrase as the ultimate aim of his life's work. But what qualities work together to create order and beauty? How can a person be trained to understand and appreciate those elusive qualities? If a society could learn to recognize and encourage such qualities, could not that society increase its moral character, be more productive and more enlightened? It was Ross’ steadfast belief that the creation and consumption of art (not just “art” but “the best art”) was the most important of human endeavors, and woefully undervalued by American society. He was not alone in his belief. The power of art to shape and improve people's lives was a favorite topic among philosophers from Plato to Hegel to Ruskin. Ross contributed to this tradition by attempting to systematize the human response to art in order to make its benefits more accessible. He sought to do what thinkers of previous generations had not—to find a definitive means of identifying the physical qualities of art that work together to create this ineffable “sense of beauty.” If the act of viewing art could be reframed as an objective experience, then it could be replicated and taught to the citizenry. The turn of the twentieth century was a formative period in the world of art education. Many theorists were working to develop a vocabulary describing the observable qualities of art. Ross’ (1901) approach was uncommon, however, in its adherence to “scientific” methodology:

As science rises from particulars to what is general and universal, as she rises to the understanding of principles and laws, causes and sequences, she comes to a conception of nature as pure design. The statement of scientific truth becomes an illustration of pure design, and art and science become one. (p. 343)

Ross was motivated by the idea of science and its promise of progress. As illustrated in the above quote, he at times became almost exultant at the idea of integrating science into the study of design. His philosophy was built on a kind of apotheosis of the word “design.” For him, “design” was a cosmological signifier of order and rationality; while he did not have the intellectual vigor to be considered a philosopher himself (nor did he claim to be one), Ross did help to bring the notion of design as a study separate from art or history into the forefront of scholarly discussion in the early 1900s. His zeal for scientific language and methods helped to shape the tone of formalism in art education, which carries on to some extent today.

The significance of Ross’ impact can be attributed to three basic factors: First, at the turn of the twentieth century, the time was ripe for change in the field of art education. Theorists, teachers, and artists alike were discussing and searching for new and different ways of approaching art pedagogy. Second, modernism (as we now refer to it) was beginning to take shape in intellectual circles, in large part due to scientific innovations, along with increased public interest in the possible implications of these findings on life in the burgeoning United States. Ross took full advantage of this. Third, Ross lived in Boston, the hub of intellectual life at the time; he received his schooling and subsequently taught visual design at Harvard, and was heavily involved at the Museum of Fine Arts, Boston. His social position, along with his personal and professional accomplishments, enabled him to proliferate and, at times, impose his views and ideas widely.

CENTRAL RESEARCH QUESTION

The following research question drove this investigation: How did the work of Denman Waldo Ross contribute to the formulation of art education in the early twentieth century, particularly as seen through his work in developing the elements and principles of design?

PROBLEM STATEMENT

I propose to study the roots of the elements and principles of design because I want to outline the context in which the theory of these terms developed and clarify the contributions of one key figure, Denman Waldo Ross. Currently, there is a lack of historical information about Ross and the influence of his work on practices within the field of art education. This oversight has created a skewed view of conditions in art education in the United States in the early twentieth century, a time period about which further investigation is needed.

MOTIVATIONS FOR RESEARCH

Aside from a long-standing interest in early modernism, my particular interest in the elements and principles of design stems from a realization I came to while perusing contemporary art education literature: The elements and principles of design are frequently associated with objectivism, positivism, conformity, and other currently unfashionable notions, and there is a growing trend away from their use as a pedagogical structure (Efland, Freedman, & Stuhr, 1996; Gude, 2007). This study does not delve into the question of whether this trend is right or wrong, it merely seeks to bring balance to the history on which such a judgment is at least partially based. In general, the field has

come to portray the elements and principles of design as a rigid, prescriptivist framework, the creation of which is almost universally attributed to Arthur Wesley Dow (Walkup, 2001). At the same time, the contributions of others toward the establishment of the elements and principles of design, particularly Denman Waldo Ross, have been underrepresented. As a result, Dow's own ideas are often conflated with or supplanted by the ideas of others, which does due credit to neither Dow nor his contemporaries. The existing scholarship on Dow is somewhat sufficient (Battiata, 2014; Mock-Morgan, 1976; Moffatt, 1977) so this study focused primarily on the writings and teachings of Denman Waldo Ross, about whom there is currently a dearth of scholarship, even though his work advanced many of the formalist ideals commonly associated with Dow. My main interest in undertaking this research was primarily to clarify the ideas and attitudes of Denman Waldo Ross.

RESEARCH METHOD

A number of primary documents were consulted in the course of this historical inquiry. The Denman Ross Papers, located in the Harvard Art Museum Archives, were of invaluable help in rounding out my sense of Ross' ideas and attitudes. In addition to providing a wealth of information to supplement his published work, his personal notes provided convincing evidence of Ross' complete commitment to pure design as the definitive method of teaching and understanding visual art. Seemingly every painting he looked at, every foreign country he visited, every landscape or structure he saw, he diagrammed, analyzed, and interpreted using his own analytical methods. Much of what he wrote was unintelligible, due to his idiosyncratic style of penmanship, but the meaning was clear: Denman Ross lived and breathed "pure design."

DEFINITION OF TERMS

Science—The word carries many possible interpretations. For Ross it provided a way of finding something tangible and absolute within the chaos of nature. His idea of Science entailed solving and explaining; making progress in a consistent, linear fashion.

Elements and principles of design—In the context of this thesis, the “elements and principles of design” are referred to in a general sense, as a group of terms. Specific terms within this group have varied widely depending on who wrote what text and when it was written. Dow designated different elements and principles in *Composition* (1899) than Ross did in his *A Theory of Pure Design* (1907). Still other terms have been employed as elements and principles of design over the course of the twentieth century.

Elements and principles of art—As the twentieth century moved forward, the “elements and principles of art” began to be used along with, and sometimes instead of, the elements and principles of design. This thesis is not concerned with the elements and principles of art as a category of terms, because Denman Ross wrote exclusively about *design*.

Design principles, according to Ross—In *A Theory* (1907) Ross identifies three principles of “Order”: “By Order I mean, particularly, three things,— Harmony, Balance, and Rhythm. These are the principal modes in which Order is revealed in Nature and, through Design, in Works of Art” (Ross, 1907, p. 1).

Design principles, according to Dow—Dow (1899) identifies five “principles of composition”: opposition, transition, subordination, repetition, and symmetry.

LIMITATIONS OF THE STUDY

The bulk of this study focuses on events and cultural conditions in the United States at the turn of the twentieth century. In exploring the ideas that contributed to the

formulation of the elements and principles of design, comments and analysis have been restricted to those events and ideas surrounding the career of Denman Waldo Ross. This study does not include a complete biography of Ross, though he did leave informative notes on the subject. There were several influential texts on the subject of the elements and principles of design, the legacies of which are still discernible today in the ways the terms are applied and discussed, but they are mentioned only as they relate to Ross' work. Likewise, competing trends in art education that were ascending toward the end of Ross' career, such as the movement toward creative expression spearheaded by educators such as Victor Lowenfeld and Herbert Read, are left out in order to sharpen the focus of this relatively concise study.

BENEFITS TO THE FIELD OF ART EDUCATION

When I tell fellow art educators that I am preparing to do a historical study on the elements and principles of design, the most common response is one of surprise: "I didn't know the elements and principles of design had a history!" The first and most straightforward benefit that this research will have on the field of art education is simply to broaden art educators' understanding of how the elements and principles of design emerged within the field of art education. This will help prepare the field to make informed decisions about where the concept should be taken in the future. Several works have been written regarding one or another aspect of the work of Ernest Fenollosa and Arthur Wesley Dow, who are accepted to be the founders of the concept. However, even those texts are few in number compared to the enormous influence that the elements and principles have had on the last century of art education. Far less has been written about the work of Denman Waldo Ross, although recently his work has received some attention

in the field of architectural education. To my knowledge, no major work on the subject of the history of the elements and principles of design has been published since 1987. At the same time, critical references to the concept have increased over the last two decades. My aim is to lend balance to the existing body of literature and add to our existing knowledge base regarding the emergence of the elements and principles of design within art education in the early twentieth century.

Chapter 2: Review of Literature

Denman Ross (1853–1935) was undoubtedly a person of influence in Boston during his lifetime. He had a substantial reputation as an art connoisseur, and is still remembered for the scope and sensitivity of his private collection, consisting of more than 16,000 objects. He eventually donated his entire collection to the Museum of Fine Arts (MFA), Boston, Harvard's Fogg Museum, and other educational institutions. Enough was thought of his accomplishments as a collector that the MFA, Boston, for instance, established the “Denman Ross Society,” in his honor; the Society recognizes extraordinary contributors to the museum's collections. He was also connected with many influential scholars, painters, and writers of the time through shared conversations, public lectures, published works, and mutual criticism. As a result, Ross is frequently mentioned in historical studies on subjects related to his interests. However, there is not a great deal of existing scholarship concerned exclusively with his life and work pertaining to art education. I have separated the literature pertinent to this research into five categories: Ross’ published work and personal papers, scholarship on Ross, art education history, works by Ross’ contemporaries, and writing history.

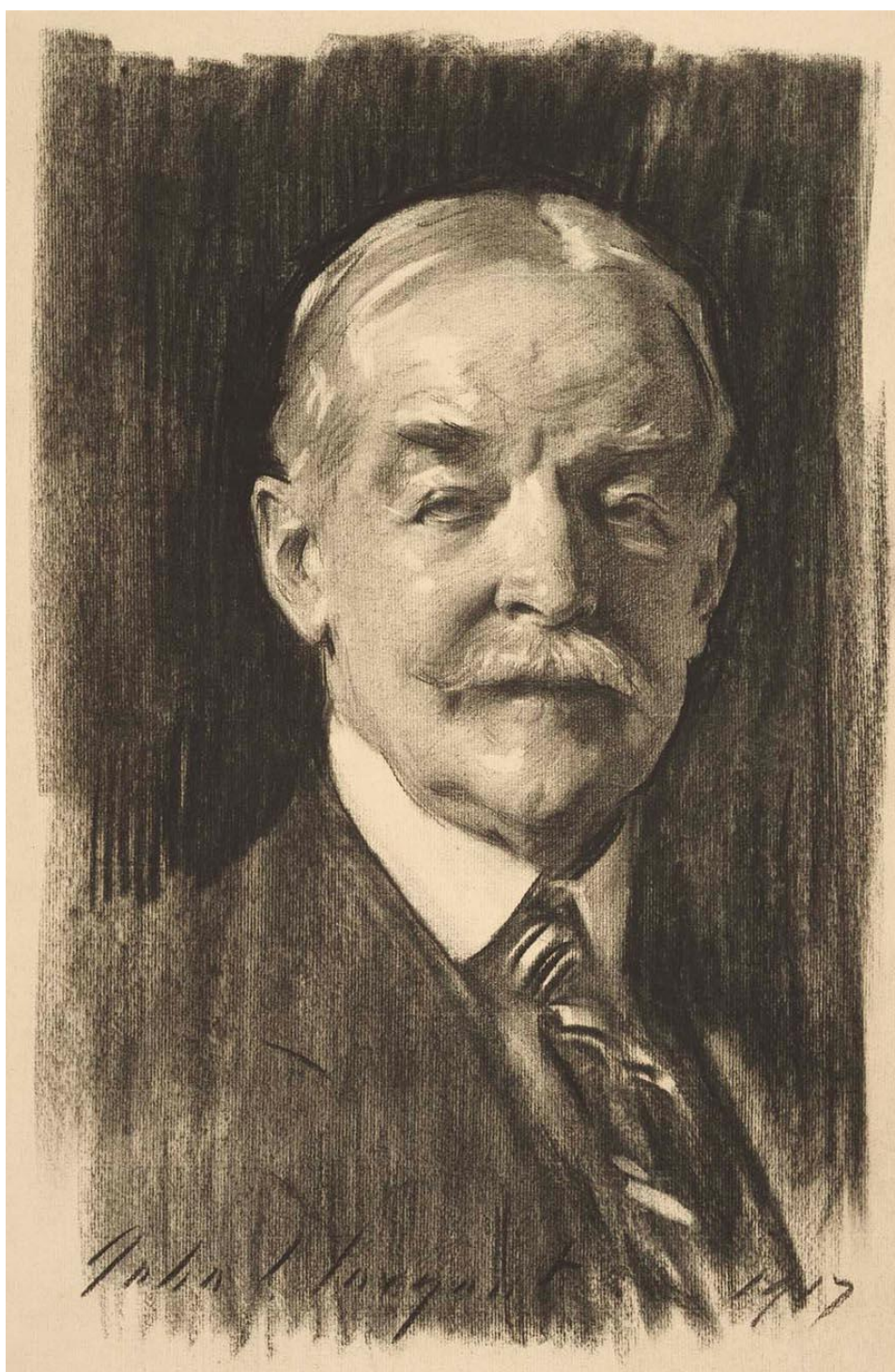


Figure 1: Portrait of Dr. Denman Waldo Ross, 1917, John Singer Sargent, Museum of Fine Arts, Boston

PUBLISHED WORK AND PERSONAL PAPERS

Most of the literature I consulted for this research consisted of Ross' own published work, as well as his personal papers in the Harvard University archives. Ross published five books in his lifetime: *The Early History of Land-holding Among the Germans* (1883), *Illustrations of Balance and Rhythm for the Use of Students and Teachers* (1900), *A Theory of Pure Design: Harmony, Balance, Rhythm* (1907), *On Drawing and Painting* (1912), and *The Painter's Palette* (1919).

The Early History of Land-holding Among the Germans served as Ross' doctoral dissertation, and was his only non-art-related text. It marks the beginning of his serious use of scientific methodology to answer a question within the humanities. On the writing of history, Ross (1883a) recommended the following assessments, "in order to reach a just judgment of the theory":

Three inquiries should be made: —1. Are the passages of the records, which are described or referred to, correctly interpreted? 2. Have any passages in the records been overlooked, which are inconsistent with the theory offered? 3. Are the facts which have been ascertained well arranged and fully described? (p. iii)

Ross' determination to produce a definitive historical document, all of which was "correctly interpreted ... well arranged and fully described," reveals his attitude toward research and writing. His goal was nothing short of mastery, and he believed in the ability of science to aid him toward that end. While he did admit that "an entirely satisfactory statement still remain[ed] to be made," and "absolute truth is far away from us, and unattainable" (p. iv), he still believed in the power of knowledge to build on itself and produce something better than had ever before existed: "We advance in this way very slowly, but surely; having always something new to say involving the best of what has been said" (pp. iv-v). His basic approach to knowledge and the process of

scholarship remained the same as he moved on to artistic inquiries, despite the inherently subjective nature of the material.

Illustrations of Balance and Rhythm for the Use of Students and Teachers (1900) was created as a classroom aid, consisting of a collection of examples using the methods of pure design. There is no text and little context provided in the book. The text of *A Theory of Pure Design: Harmony, Balance, Rhythm* (1907), however, serves as sufficient explanation of anything contained in the previous publication; it remains the definitive statement of Ross' beliefs and methods. In it Ross chose to include only diagrams to illustrate his ideas, all intentionally devoid of historical or stylistic associations. The book was meant expressly as a study of the formal qualities of art:

It is my purpose in this book to show how, in the practice of Art, as in all other practices, we use certain terms and follow certain principles. Being defined and explained, these terms and principles may be known and understood by everybody. They are, so to speak, *the form of the language*. (p. v [emphasis in original])

In keeping with this idea, Ross claimed *A Theory of Pure Design* as “a contribution to Science rather than to Art” (p. v). He structured the content around three principles: harmony, rhythm, and balance. Mastery of the concepts of pure design, he took trouble to assert, did not necessarily carry with it the ability to create “anything important or remarkable” (p. 192); the central goal of pure design was appreciation—a faculty achievable by everyone, provided they worked hard enough:

If our studies and our work bring us to the point of visual discrimination, to aesthetic appreciation and enjoyment, and no farther, we are distinguished among men. ... Order in its higher forms—the order of a great number and variety of terms and of different principles in combination—lies altogether beyond the appreciation of untrained people. It is only as we are trained, exercised, and practiced in the use of terms and in following principles that we rise to the appreciation of great achievements. (p. 192)

Ross' final two publications, *On Drawing and Painting* (1912) and *The Painter's Palette* (1919), can be seen as two parts of the same work. They continue the theme of explicating principles for the purpose of appreciation, focusing on the use of color, or as Ross would have it, "tone relations." *On Drawing and Painting* outlined the theoretical side of the matter, while *The Painter's Palette* provided a practical guide. The two books center on Ross' concept of the "set palette," which provided the artist with a system for choosing a limited array of colors for use in a given composition. It was Ross' belief that such parameters freed the artist and encouraged exploration, rather than confining the creative impulse:

The question comes up whether it may not be possible for the painter to convert this palette into an instrument of precision and to make the production of effects of light and color a well ordered procedure,— a procedure which everyone can understand and follow. If this is possible, the mind of the painter may be released from the problems of the palette and devoted, almost wholly, to the still more important problems of Subject, Design, and Representation. (Ross, 1919, pp. v-vi)

Ross worked with single-minded determination on one central idea: that art was guided by principles, and an understanding of those principles brought the power to enhance not only the efforts of the artist, but the public's ability to comprehend and enjoy works of art. While this is made amply clear in his published works, it is only verified and compounded by a perusal of his personal papers, held at the Harvard Art Museum Archives. Ross' diaries, primarily documenting his travels in Europe, East Asia, and Central America, are filled with detailed color notations, architectural sketches, and analyses of paintings and sculptures. Also included in the papers is a brief autobiography, which describes his early education and travels, his eventual decision to pursue art over historical research, and also the development of his interest in painting and art collecting.

The Freer Gallery of Art and Arthur M. Sackler Gallery Archives also hold materials pertaining to Ross' career, including exhibition announcements and catalogs, newspaper and magazine articles, brochures, and other ephemera. These were helpful in forming an idea of Ross' involvement in artistic and academic circles.

SCHOLARSHIP ON ROSS

As mentioned previously, scholarship on Denman Ross' work is relatively thin, especially given the amount of influence he had during his lifetime. Little has been written about him in terms of his contributions to art education. The most complete assessment of Ross' contributions was published by the historian of architectural education, Marie Frank. Frank's book *Denman Ross and American Design Theory* (2011) is the culmination of many years of research, a continuation of her doctoral dissertation on the same subject. Ross' career was spent in single-minded pursuit of beauty through design, and this quest connected him with myriad thinkers and institutions. Frank's book serves as a biography of Ross as well as an exploration of Boston intellectual life at the turn of the twentieth century. As the only major work on Denman Ross in print, both the information and the treatment of the topic were of much use as I familiarized myself with Ross and the sociocultural milieu that surrounded him. Frank also explored a number of obscure resources in the writing of her book, some of which were very difficult to obtain. In rare cases I have relied on her research, citing directly from *Denman Ross and American Design Theory*, rather than from the original source, due to lack of access to those referenced materials.

In another study offered from the field of architecture, *Uncertainties of Reason: Pragmatist Plurality in Basic Design Education* (2004), Mine Ökzar argued that both

Ross and Dow provided pedagogical models that enabled individualized approaches to design and recommends a return to their methods from the less flexible approaches to teaching design, particularly technology design, currently used. His study provides extensive exploration of Ross' methods of geometrical analysis.

Peter Stoneley also wrote about Ross' use of geometry, but looked at it from a sociological perspective. In his article for the *New England Quarterly*, "Young Men and the Symmetrical Life" (2014), Stoneley centered his argument on Ross' obsession with order as expressed through his employment of geometrical analysis, specifically of the male figure. This article serves as a corroboration of Ross' importance as both a theorist and cultural figure, as Stoneley acknowledged *A Theory of Pure Design* (1907) to be one of its generation's most influential texts on design theory (p. 192).

Barbara Jaffee also referred to Ross' reputation in her article, "Before the New Bauhaus: From Industrial Drawing to Art and Design Education in Chicago" (2005). She wrote that Ross' "lectures on the theory of design at Harvard captured the attention of a generation of future architects, museum administrators, and art historians in the opening decades of the twentieth century" (p. 45). The primary goal of the article was to trace the influence of design education on the School of the Art Institute of Chicago in the early twentieth century; in doing so, she credited Ross with having heavily influenced Professor Walter Sargent, who, in turn, influenced the nature of the coursework at the Art Institute. Sargent's aim was to integrate fine and industrial interests in one cohesive art curriculum and, according to Jaffee, he did this in large part by employing Ross' methods.

Jaffee went on to draw an association between Walter Sargent and Henry Turner Bailey, whose role in shaping American art pedagogy was explored by Mary Ann Stankiewicz in the book chapter, "Rules and Invention: From Ornament to Design in Art

Education” (1990). In it, she named Ross as an important influence on Bailey's ideas about art and design education. She also argued that Ross’ work was as important as Arthur Wesley Dow's in establishing the nomenclature of art education into the twentieth century.

A number of other publications touch on one or another of Ross’ contributions to design theory and art collecting. These include Judith A. Bookbinder's *Figurative Expressionism in Boston and its Germanic Cultural Affinities: An Alternative Modernist Discourse On Art and Identity* (1998), and Ruth Pasquine's *The Politics of Redemption: Dynamic Symmetry, Theosophy, and Swedenborgianism in the Art of Emil Bisttram (1895-1976)* (2000). These works were read and considered, but the content of these volumes did not have any direct bearing on the conducting of this research.

ART EDUCATION HISTORY

In order to form an understanding of major cultural trends at the turn of the twentieth century, I looked at primary sources, including the published writings of key figures such as John Ruskin and Walter Smith, and also secondary sources written by historians of art education. I relied on Arthur Efland's *A History of Art Education* (1990) for an overview of nineteenth and early twentieth-century trends in American art education. Efland's treatment of the careers of both Walter Smith and John Ruskin were helpful in providing an understanding of their contributions to art education as well as to the greater culture. Efland characterized Smith as a South Kensington-trained educator dedicated to the industrial application of drawing. The trend toward industrial drawing was ultimately eclipsed by the arts and crafts movement, the influence of which was due in large part to the lectures and writings of Ruskin. Stankiewicz pointed out this same

dichotomy between the South Kensington system and Ruskin's Romantic idealism in "Rules and Invention: From Ornament to Design in Art Education" (1990). She described the South Kensington model as "rule-governed" (p. 92), and connects its influence with writers and educators such as Owen Jones, Ralph Wornum, and Walter Smith. She contrasted their work with that of Ruskin, which pointed at the artistic personality as the main creative force behind of a work of art, though he did not discount altogether the role of design principles in guiding the production of the work. Stankiewicz credits Henry Turner Bailey for his instrumental role in helping to incorporate both these views into American art educational methods, since he was influenced by both the South Kensington model and Romantic Idealism. She then connects Bailey with Ross, pointing out Bailey's support of Ross' methods, especially in his capacity as editor of *School Arts Magazine*. Stankiewicz offers another helpful perspective on art education history in "From the Aesthetic Movement to the Arts and Crafts Movement" (1992), which outlined reactions to Industrialism within the sphere of art and art education.

WORKS BY ROSS' CONTEMPORARIES

Denman Ross maintained close connections with many artists, art theorists, and educators, many of whom were themselves published scholars. Understanding the work of Ross' colleagues and contemporaries—his teachers, friends, and students—helped me to put Ross' contributions into proper context.

Of Ross' professors at Harvard, Henry Adams and Charles Eliot Norton appear to have had the strongest influence upon him. Adams introduced Ross to the idea of applying scientific inquiry to the humanities when the latter was a graduate student in the

history department of which Adams was the head. Adams believed science had the potential to change the nature of the human experience—both in terms of behavior and environment—and he was at once drawn to and intimidated by the idea. He contemplates the possible implications of such change in his autobiography, *The Education of Henry Adams* (1907). While Ross did not display the same depth of interest in the sciences in his own work, he did owe his initial education in the scientific process to Adams' teaching.

Charles Eliot Norton's influence on Ross is discussed in detail in chapter four, but it will be helpful at this juncture to mention the content of Norton's teachings, which constituted a large portion of Ross' training in art and art history while an undergraduate at Harvard. Though Norton's views were many and varied on the subjects of art history and aesthetics, for the purpose of this research I have confined my comments to only a portion of his work, as it applied to Ross. The chief concern of this research was to establish Norton's adherence to the teachings of John Ruskin, whose work had a controversial effect on Ross' methods and ideas. Norton did not publish much to speak of during his lifetime, nor were his lectures ever transcribed, so in order to come to know his work I consulted a well-regarded biography of the professor, *Charles Eliot Norton: Apostle of Culture in a Democracy*, by Kermit Vanderbilt (1959), as well as Norton's extensive correspondence with John Ruskin, *Letters of John Ruskin to Charles Eliot Norton* (1905).

In addition to his formal efforts at Harvard¹, Ross often chose to attend lectures and demonstrations outside the scope of his standard course of study. It was in this manner that Ross became aware of the ideas of George Santayana and Hugo

¹ Ross entered Harvard as a freshman in 1871 and completed his doctorate in 1880.

Munsterberg, who were involved with Harvard's then-newly established experimental psychology laboratory. Both are considered pioneers in the field of experimental psychology.

George Santayana wrote *The Sense of Beauty: Being the Outline of Aesthetic Theory* (1896) based on his Harvard lectures. The book was meant as an exploration of aesthetic appreciation—how beauty is perceived by the human mind, and how it is revealed in the human experience. In *A Theory of Pure Design* (1907), Ross argued that beauty was “not a principle, but an experience” (p. 4). Santayana expressed a similar idea first in *The Sense of Beauty*, suggesting that his work had some influence on Ross. Santayana put forth the idea that beauty itself was essentially abstract, and could only be processed or understood by means of concrete analysis:

We should be incapable of surveying or retaining the diffused experiences of life, unless we organized and classified them, and out of the chaos of impressions framed the world of conventional and recognizable objects. (1896, p. 29)

Santayana's words bring to mind Ross' (1907) statement on the purpose of pure design: that it was to “define, classify, and explain the phenomena of Design” (p.vi).

Hugo Munsterberg also had a hand in forming Ross' ideas about how art should be taught. In *Principles of Art Education* (1904) Munsterberg advocated for education on the basis of universal principles, rather than imitation, just as Ross did:

The child, who, with a few clumsy lines, aims at dividing a space in the most pleasing manner, is nearer to the ideal of beauty than the other child who is able to copy most exactly and in all its details a complicated ornament. (p. 71)

Munsterberg also had a great deal to say about the relationship between art and science, but insisted that they operated fundamentally differently—science toward “connection,” and art toward “isolation” (pp. 20-21). Ross, on the other hand, preferred to characterize them as complementary.

Other Harvard professors, such as Henry Cabot Lodge, Ephraim Emerton, Charles Dunbar, Henry Torrey, and Ephraim Gurney, likely had some effect on Ross as well. He graduated in 1875 with his bachelor's degree in history with highest honors, having completed courses in a diverse array of subjects, including physics, political economy, philosophy, and forensics (cited in Frank, 2011, p. 26).

In Ross' work there was often an overlap between student and colleague, as many of those who attended his summer courses at Harvard were active professionals in the field of art education. One such person was the artist and teacher Ernest Batchelder, who took Ross' course on design in 1901 and subsequently published two texts on design, *Principles of Design* (1904) and *Design in Theory and Practice* (1910). Ross' influence is evident in both works, even in their titles. *Principles of Design* opens with a strong acknowledgment of Ross' influence, and *Design in Theory and Practice* includes two lengthy epigraphs taken from Ross' *A Theory of Pure Design* (1907). Batchelder's purpose in writing the two books was essentially the same as that of Ross; that is, he sought to "define the principles of design and their practical application, touching upon a more sane, more artistic production, on the one hand, and a more intelligent, more discriminating judgment on the other" (1910, pp. v-vi). Batchelder, however, managed to present the ideas in concise and straightforward prose, while Ross tended toward a more dense and meandering style. This may account for the relative success of Batchelder's books compared with those of Ross, which were considered more learned and original. (Both *Principles of Design* and *Design in Theory and Practice* went through multiple reprintings in the first decade of their publication.)

Another colleague of Ross whose work closely resembled his own was Professor Arthur Wesley Dow of Columbia Teachers College. Dow is often named in art education literature as the originator of the elements and principles of design, and, indeed, he

played a major role in bringing them to prominence in the field. His first and best known book, *Composition: A Series of Exercises Selected from a New System of Art Education* (1899), is generally considered to be one of the most influential art education texts of the modern era. It opens with an introduction to Dow's central beliefs about art. He defines "composition" as "the putting together of lines, masses, and colors to make a harmony," asserting that it is through composition that art should be approached (p. 3). He published a follow-up to *Composition* in 1908, *Theory and Practice of Teaching Art*. Like Ross, Dow named a number of basic elements and principles utilized in visual art (his terms differed from those used by Ross). Unlike Ross, however, he chose to stress the intuitive nature of art creation. The opening lines of *Composition* concede that "the most that such a book can do is to direct the thoughts, awaken a sense of power and point to ways of controlling it" (Dow, 1899, p. 3). Compare this with words from the preface to *A Theory of Pure Design*: "My purpose, in scientific language, is to define, classify, and explain the phenomena of Design" (Ross, 1907, p. vi). Dow sought to instill some sense of subjectivity in the design process, while Ross pursued objectivity.

Ross had a number of close friends and colleagues who shared his interest in taking a scientific approach to design. Among them was the theorist Jay Hambidge, who, with Ross' help, was able to secure a fellowship at Harvard; Hambidge was notable at the time for the interest generated by his book *Dynamic Symmetry: The Greek Vase* (1920), his first of three books written on the subject of balance and proportion in design. His work centered mostly on the idea that great art throughout the ages had followed certain mathematical patterns, which he proposed to analyze and codify for the use of future generations of artists and scholars. Ross remained closely connected with Hambidge and adapted his methods of geometrical analysis for his own use.

Another of Ross' contemporaries in the field of design theory, Albert H. Munsell, published two volumes investigating the mechanics of color theory, *Atlas of the Munsell Color System* (1915) and *A Color Notation* (1905). Munsell's color system is still highly regarded today for its elegance and usefulness, and is a standard reference tool in such diverse fields as soil analysis and dental prosthesis. Ross and Munsell were acquainted (Munsell was also a Bostonian), and they sometimes exchanged ideas and advice regarding their respective theories on color analysis and organization (Frank, 2011).

Other design theorists such as Samuel Colman, Hardesty Maratta, and David R. Hay also interacted with Ross, each influencing the other's work. An exhaustive exploration of Ross' contemporaries, however, was beyond the scope of this research.

WRITING HISTORY

Denman Ross was schooled in the methods of scientific history, also called positivist history, which strove to discover objective truth in the facts of the past. In *The Historian's Toolbox* (2007), Robert C. Williams remarked that for scientific historians, "explanation is equivalent to prediction" (p. 17), which is to say, by establishing a causative relationship in one case the historian may point to a pattern with the potential for universal application. This approach to history was much employed in the latter part of the nineteenth century (when Ross was a student at Harvard), finally falling out of favor around the 1920s. Such an authoritative approach to the process of historical scholarship is generally considered to be out of keeping with attitudes toward history in the post-modern era, and has not been applied to this research; it was, however, considered for its bearing on Denman Ross' ideals and habits of thought.

That being said, however, I do agree with the general assumption of scientific history, that a historian may, by focused and purposeful effort, lend greater clarity or contribute deeper meaning to our collective knowledge of the past. Gordon Wood, in his article “In Defense of Academic Historical Writing” (2010), upheld the value of analytic history as a way for historians, especially those beginning their careers, to participate in the discipline in a meaningful way. He grants that they do not tend to captivate the popular imagination in the way that narrative histories do, but nevertheless they serve an important purpose in the furtherance of the discipline as a “cumulative science” (para. 6).

Williams (2007) characterized the historian as having a dual intention: to “discover order and structure in the chaos and messiness of the past” and to “[construct] order and structure by creating a narrative or an argument, based on verifiable evidence” (p. 12). A historian must gather and interpret. This investigation is not particularly grand or ambitious in its aims; the mere act of choosing people, events, and examples for inclusion in these pages, however, entails a considerable amount of interpretation and lends a note of subjectivity to even the most direct and straightforward historical account. I have sought with this research simply to lay out an explanation of the motives, methods, and impact of a lesser-known scholar whose work may have bearing on the field of art education, past and present.

Currently, scholarship on Ross has touched a variety of fields, from architectural history to sociology. His place in art education history remains to be fully explored. The works of Ross’ contemporaries offer insight into the time period in which he lived, as well as into the nature of his work on design. The large amount of primary material left by Ross, both published and unpublished, provides a ready source for further research. Over time, information and insights will continue to be uncovered and shared among scholars and practitioners of art education, and the field will be the richer for it.

Chapter 3: Reflections on Historical Research

The better part of this investigation consisted of archival research and the perusal of published works by Denman Ross. The act of consulting archival materials at first may seem straightforward—and in many ways it is—but primary materials must be read with a nuanced awareness of context and intention if they are to be rightly understood and interpreted. Nineteenth-century historian and historiographical theorist Ernst Bernheim advised scholars to take into account the motives of the author; one must always consider the point of view from which the material was originally written (cited in Grigg, 1991, p. 229). This advice is as sound today as it was more than a century ago. While published texts can be taken at face value, unpublished notes were rarely written with so direct or distinct a purpose. It was clear to me when reviewing Ross' personal papers that individual materials within the collection were written with widely differing intentions. Some were serious and studied in tone, while others were merely the musings of the moment. Some were written with the clear thought of being read someday by posterity, while others were of an off-hand personal nature. Still others appeared to be written in a confident, definitive tone, but the content itself proved to be incompatible with other ideas expressed elsewhere. This does not mean that Ross was contradictory or incoherent, but only that he was mistaken in his expression, or he changed his mind, a natural part of the process of working out an idea.

The time I spent with Ross' personal papers was short but intense. I was able to visit the Harvard Art Museum Archives in the summer of 2013. As I familiarized myself with the materials (two linear feet in all, though I requested only a portion of this), sleuthing out Ross' intentions became an engaging project. Most of the pieces relevant to my research were written in preparation for lectures, articles, or other formal

presentation; so, while he wrote them only for his own use, the intended audience was an interested and well-informed public, and the tone and content followed accordingly. More interesting were the parts not directly applicable to my topic, such as Ross' travel diaries and sketches. Although the professor's handwriting was abysmal (another interesting project—it was only at length that I became sufficiently experienced to decipher his notes), Ross' personal notes provided insight into his character and interests.

At one point, in a diary kept during his travels in Spain, Ross recounts a funeral procession he stumbled on while strolling the streets of Granada:

Saw a pitiful sight this afternoon: a little boy being carried to his grave. The little fellow lay in the bin with a few leaves and flowers on him his little round brown head being visible from where we stood. The hair was cut shorn close. He must have been playing about a few days ago. Some boys and girls carried the bin. The father and mother (with a baby in her arms) followed. There was no appearance of sorrow no weeping. It seemed almost like a merry-making for some of the people were talking one or two were laughing! Poor little fellow! Perhaps they were glad to bury him and not to have to feed him. They were very poor people. (Ross, 1883b)

While the sentiment offered in this entry is genuine, what struck me was his want of imagination or cultural sensitivity. Different ways of grieving, different ways of viewing death, apparently never crossed his mind. The people were poor, so they must be starving; they were smiling, so they must be glad. Despite being a world traveler, he seemingly did not step out of his upper-class, materialist worldview.

Ross does not appear to have been a reflective man. The effect of this was a kind of intellectual inflexibility, which in some cases made him seem obtuse or uncreative, but on the whole it enabled his work to be confident and consistent in its form and content. Once Ross hit on the idea of pure design, he applied himself to it with the fullness and commitment of religious conviction. Hardly a day passed when Ross did not write, draw, paint or converse in pursuit of a better understanding of design. When journeying

through Egypt in the 1880s he filled his dairy with detailed gridded diagrams of landscapes, complete with extensive color notations. On holiday in Venice, Ross wasn't content just to admire the historic palazzos of the city; he instead spent a great deal of effort diagramming and analyzing their structural motifs (Ross, ca 1890). Virtually all of Ross' papers—diaries, notebooks, sketchbooks, correspondence—point back to the subject of design. It was Ross' greatest interest and his life's work.

Chapter 4: Developments in Art Education at the Turn of the Twentieth Century—Their Influence on Ross

OVERVIEW

At the turn of the twentieth century, as a result of increased trade and travel around the globe, westerners were exposed to different ways of making and interpreting visual art. Artists and scholars responded by incorporating these new ideas into their work. Many, Denman Ross included, undertook to improve the public's understanding of art through increased access to original works of art and a standardized art educational system. The field of art education was just beginning to find its footing within the American educational system, but was in need of a new paradigm. This chapter discusses the pedagogical trends that were most influential in the latter part of the nineteenth century—the South Kensington system of England, the Academy system of France, and the philosophies of John Ruskin—and considers the work of Denman Ross in terms of his response to what he perceived to be the problems and merits of these instructional approaches.

INTRODUCTION

In the years leading up to the twentieth century, there was an increasing sense among intellectuals that American art lacked direction. Boston, the center of Yankee cultural life at the time, was seen at best as a distant satellite of Paris. Members of the Boston elite such as Isabella Stewart Gardner and William Sturgis Bigelow addressed this perceived deficiency by traveling extensively and bringing back art and ideas from the world over—particularly from the Far East. Japan began the process of opening its borders in 1853 (the same year in which Denman Ross was born), and a number of

Boston natives, like Edward S. Morse and Ernest Fenollosa, became interested in studying and collecting works of Japanese sculpture, painting, printmaking, and ceramics. Many of these works were subsequently acquired by the Museum of Fine Arts, Boston, which opened in 1876²; as a result of these and other acquisitions, Boston became a leader in the exhibition of works from outside the European tradition, giving the public access to *ukiyo-e* prints, Buddhist statuary, South Asian tapestries, and African sculptures. The explosive increase in the breadth of scholarly awareness of the world's art did not just influence style or technique, but notions about the very definition of beauty—about what it meant to call something a work of art. It also invited comparisons and questions: what do these works, so different in history, style, and technique, have in common with each other? Art theorists began to recognize a need for a shared vocabulary to permit a more systematic study of these new art objects; it was a subject widely discussed as the nineteenth century came to a close.

Denman Ross was one of several Western scholars who undertook to systematize the language and practice of teaching and creating art. Owen Jones was among the first of this era to refer to general “principles” underlying art and design³. He published *The Grammar of Ornament* in 1856⁴, which used decorative shapes and patterns as examples of those principles. Arthur Wesley Dow and Ernest Fenollosa worked together on a “synthetic” system which sought to identify and catalog the fundamental qualities present in all great works of art. Dow's career has received much attention for its contribution to art educational practices, in large part due to the success of his book, *Composition: A*

²In fact, Denman Ross orchestrated the museum's acquisition of Edward Morse's collection of Japanese ceramics in 1889, which helped the museum to gain a reputation for its international collection.

³Others in this early generation of scholars interested in formalism include Charles Blanc, Walter Crane, Lewis Day, Christopher Dresser, and Ralph Wornum.

⁴Ross would later use *The Grammar of Ornament* as a reference in his classes at Harvard.

Series of Exercises in Art Structure for the Use of Students and Teachers (1899), along with his extensive work as a teacher at Pratt Institute, Teachers College, Columbia, and his independent summer school, which he ran from his property in Ipswich, Massachusetts (Dow, 1899). Ross' concept of "pure design"⁵ was also a response to the contemporary need for a unifying system of language and instruction for all art of all ages and origins.

Ross' ideas about how design could be understood and used were largely the result of two factors: his exposure and response to movements within the world of art education itself, and his personal interest in scientific methods (to be discussed in Chapter 5). By looking closely at the trends and attitudes prominent during his career, one can better understand how Ross' work fit into the larger scheme of contemporary art educational practices in America and Europe. By the close of the nineteenth century, two major schools of thought were on the wane: one led by the South Kensington school in England, the other led by the École des Beaux-Arts in France. Meanwhile the teachings of John Ruskin were growing in popularity and influence. Ross' work can be seen, at least in part, as a reaction to these changes. Some ideas he rejected outright, some he embraced, and others he adapted to suit his own efforts in pursuit of "the Love of Order and the Sense of Beauty."

THE SOUTH KENSINGTON SYSTEM

At the same time that world cultures were beginning to influence theory and practice in art, industry and politics were influencing art education in public schools—first in Boston, then in the rest of Massachusetts, and eventually in the remainder of the

⁵The term "pure design" was probably taken from the writing of James Jackson Jarves, whose work was influential in Ross' thinking about aesthetic faculties and "the role of vision."

country. After a poor showing at the Paris Exposition of 1867, what passed for American art elicited a growing sense of dissatisfaction, not just among aestheticians and intellectuals, but also among manufacturing magnates and politicians. These forces worked together to pass the Massachusetts Drawing Act of 1870⁶, which resulted in the expansion of free drawing courses across the state. Little financial provision or practical direction was included along with the mandate, however, except to specify “industrial or mechanical drawing” as the focus of the forthcoming instruction for citizens fifteen years of age or older living in cities with a population greater than 10,000. Soon, South Kensington-educated Englishman Walter Smith was hired as the State Director of Art Education for Massachusetts⁷, and it was left to him to determine what “industrial or mechanical drawing” would look like:

By way of summarizing the courses of study which I have endeavored to describe, I will now repeat to you that, in the Primary schools, these pupils have exercises from the black-board, definitions of geometrical forms, design, dictation and memory-drawing. In the grammar schools, there are exercises in elementary design, drawing from models, geometrical drawing, with occasional exercises in dictation and memory-drawing. In the High schools, there are exercises in painting and shading from nature, in perspective and in Applied Design. (Smith, 1875, p. 19)

But Smith's was not an entirely soulless system; in fact, at times his musings somewhat anticipate those of Ross or Dow:

Instruction in industrial design means a clear presentation of the principles which obtain in the construction and harmonious arrangement of geometric form for decorative purposes, the proper use of plant forms in ornamental arrangements, and the principles of good taste to be found in the great history styles of art. (Smith, 1880, p.70)

⁶Officially titled An Act Relating to Free Instruction in Drawing. See Bolin, *The Massachusetts Drawing Act of 1870* (1990).

⁷He also founded and directed the Massachusetts Normal Art School.

Ross would not have wholly disagreed with Smith's statement, in that it described a few possible practical uses for design (though he had a general distaste for practicality), and he certainly would not have disagreed with the reference to “good taste.” He simply would have found the entire statement deficient in scope.

Ross made a point of differentiating his ideas from those of Smith and the South Kensington system. While introducing the term “pure design,” he declared disapproval for any system “obscured by the consideration of technical processes on one hand, and of service or utility on the other” (Ross, 1907, p. 7). For him, any goal short of true appreciation would compromise the value of art, and industrial drawing stood among the most glaring examples of this short-sightedness:

Art seems to be disappearing in a vast movement of unwilling Industry which is not a movement of Art. The saddest thing of all, however, is the passing away of the contentment if not the happiness of those who, absorbed in their work, are trying to do it well. There is nothing like a definite occupation and with it the love of excellence and perfection. (Ross, 1912, p. 23)

Whereas Smith hoped to combine the power of industry with the discipline of art, Ross saw the two as forever at odds⁸:

The motive of the Capitalist is to do business. It is the Capitalist who is doing the work in these days, not the artist. Somebody says that “business is the heart of the Nation.” I guess it is. In that case there is little hope for Art. (Ross, 1912, p. 18)

Although a reaction against industrial drawing did factor into his rhetoric, it is unlikely that Ross’ theories were directly influenced by the goings on in the Boston Public schools. At the time the Massachusetts Drawing Act was passed, Ross was studying history as an undergraduate at Harvard, and was only just completing his dissertation at the time of Smith's dismissal from his post as drawing director of Boston public schools in 1881. So, while he would surely have been aware of the trend toward

⁸Ross’ views on capitalism and industry reveal the impact of the arts and crafts movement on his thinking.

“practical art” in public education, he would not have personally taken part in it⁹. In any case, industrial drawing as advocated and practiced by Walter Smith, in an endeavor separate from the other potential ends of art was a relatively short-lived notion. Smith's dismissal was itself symptomatic of industrial drawing's fall from public favor. The system was narrowly focused; it treated the “harmonious arrangement of geometric form” (Smith, 1880, p. 70) as an end, whereas Ross viewed it as a *means* to a much greater end—namely, the “Love of Order and the Sense of Beauty.” The greatest similarity between Smith and Ross lay in their vision for society, which included universal art education for the elevation of public taste. To this end, both set out to develop a streamlined system of instruction that could be replicated in a formal setting—one whose results could be understood and evaluated in unambiguous terms. This shared goal accounts for any similarities of tone and language between Ross and Smith's work¹⁰.

THE ACADEMY SYSTEM

Whereas the English system emphasized rules of design for artisans, the Academy system focused on fine art training for professional artists. Led by the École des Beaux-Arts (established in 1671), the French academy had enjoyed near-total hegemony throughout the 18th century and into the 19th. In the latter part of the 19th century, aspiring artists traveled from America to France to learn under this program, only to come back disillusioned and eager for change. The French schools taught drawing, painting, sculpture, architecture, and engraving by way of drills and exercises in anatomy,

⁹Ross was, however, heavily involved with Boston public schools in later years; he was elected chairman of the advisory committee on drawing for Boston public schools in 1913 and continued his involvement with that body throughout his career.

¹⁰Ross strove vigorously against the notion that his system taught by formula, but ultimately failed. That the “elements and principles of design” are formulaic is surely its critics' most common complaint.

geometry, perspective, and nude studies. Students were required to master drawing before they were allowed to paint, and they spent the bulk of their time copying masterworks. Paintings were categorized and evaluated largely according to subject matter, following the so-called “hierarchy of genres.”¹¹

Dow (1899) summarized the flaws of this system, and proposed instead a system based on design:

For a great while we have been teaching art through imitation—of nature and of the “historic styles”—leaving structure to take care of itself; gathering knowledge of facts but acquiring little power to use them. ... Schools that follow the imitative or the academic way regard drawing as a preparation for design, whereas the very opposite is the logical order—design a preparation for drawing. (p. 4)

Ross (1912) agreed. By his observation the academic method undermined the artist's ability to think and solve problems for himself:

The teaching of drawing and painting in the schools is little more than supervision, on the part of the teacher, of exercises in the imitation of casts, models and other forms of still life. A statistical accuracy is all that is required and all that is expected. The teacher says little or nothing about the choice of materials or about methods of using them. He has nothing to say about the different modes of representation or about the limitations and possibilities of these modes. He says nothing about the methods of getting a consistency in tone-relations or any other relations. He advises drawing but does not tell us how to draw. As for the problems of Design, they are entirely ignored. If you ask why this is so, the painter who teaches will tell you that these are things that every painter must find out for himself. The students in the Schools of Drawing and Painting proceed, therefore, with no knowledge or understanding of the art which they propose to practice, except what they get as they work on by themselves, imitating what they see in the cast or the model and making a sad mess of it, as a rule. (p. 7)

For corroboration, Ross goes on to quote Pierre Renoir, who had been interviewed by *Scribner's Magazine* shortly before the publishing of Ross' *On Drawing and Painting*:

¹¹The hierarchy of genres ranked history painting first, followed by portraiture, genre, landscape, animal, and, finally, still-life.

“The bad system begins in the Schools—I was in all of them and they were all bad. The professors were all ignorant men; they did not teach us our trade” (as cited in Ross, 1912, p. 8).

The Academy's adherence to the hierarchy of genres resulted in the domination of subject matter over all other qualities; Ross found this idea intolerable—not only with respect to artists and art students, but in regard to the public, whose sense of taste and appreciation for beauty he hoped to elevate by focusing on form rather than content or technique:

To be good judges and critics we must consider not so much the subject but the treatment of the subject, what we call the composition or design and the workmanship. ... This we understand very well in the field of Speech and Writing. We do not regard mere statements of fact as contributions to the Fine Arts of Speech or of Writing. We have no hesitation in drawing the line between Statistics and Literature, but this is a discrimination often missed by the beholder of pictures who thinks he is a lover of Art when he is only a lover of facts and information. (Ross, 1912, p. 2)

Despite its apparent defects, the academy system held one idea with which Ross certainly agreed: that students and teachers alike can benefit from the process of learning about art. By the close of the nineteenth century, Ross was in a position to offer an alternative to both the academy system and the South Kensington system, helping to end the compartmentalization of purposes and process that they implied.

RUSKINIAN PHILOSOPHY

The other key agent of change in art theory and education at the turn of the twentieth century was the work of John Ruskin, whose Romantic idealist philosophies waxed in popularity and influence as support for the industrial and academy methods waned. Ruskin's position as a teacher and advocate of visual art made him a model for

the next generation of academics, and his ideas were widely discussed among artists and scholars both in and out of the university setting. Ross did not wholly embrace Ruskin's teaching, but his ties with the tradition were strong, and he was influenced, if not in particulars, at least in terms of the tone of his mature work, by Ruskin as well as by Ruskin's main advocate at Harvard, Charles Eliot Norton.

As a professor at Oxford, Ruskin was able to initiate the conversation about the substance and importance of art on an international level; furthermore, he and Norton both set a significant academic precedent by integrating art into the standard offerings at large influential universities. Ruskin held the first professorship of Fine Arts at Oxford, and in doing so brought the topic of visual art into a formal scholarly setting¹². Norton continued this trend at Harvard. The establishment of a course of study dedicated exclusively to visual art carried an important symbolic meaning in the story of American scholarship, certifying the discipline as a legitimate area of serious, formal study¹³. Ross felt bound by his family's social status to become a "gentleman scholar," but visual art did not exist as an option for academic study in 1860s when he was forming his early career plans:

There was no art school I could go to except in Paris. ... I was very fond of Music and played the piano in an amateurish way. There was no music school at the time in Boston. Music was all right as a pastime but not as a profession. I had the best possible instruction [in dancing], but for me to become a professional dancer! It was ridiculous to think of it. I might amuse myself with drawing and painting, with music or dancing but what I had [to] think about, seriously, was getting into Harvard without conditions, if possible. (Ross, n.d. a)

¹²Ruskin was installed as Oxford University's first Slade Professor of Fine Art in 1869. He subsequently established the Ruskin School of Drawing and Fine Art in 1871. Previous to Ruskin's tenure, art was a serious topic among intellectuals only in an extracurricular setting.

¹³This addition of a department of fine art was accomplished by the reorganization efforts of Charles William Eliot (cousin of Charles Eliot Norton), inaugurated as Harvard president in 1869.

It was during Ross' time as an undergraduate that Norton was brought to Harvard as a fine arts lecturer. Norton's simple presence as a scholar and professor of Ross' favorite pursuit¹⁴, until then something of a guilty pleasure, must have bolstered his confidence and given him hope of teaching the subject himself, a goal he finally achieved in 1899 when he became a lecturer on design at Harvard.

Ross followed Ruskin's published lectures avidly in his early years as a student, going so far as to host a Ruskin discussion group at his home in Boston (Ross, n.d. a). He also frequented lectures on art history delivered by Norton. Like Ruskin, Norton argued for the study of art from a literary and historical perspective. He saw art as both a consequence of and an influence on the values of a society; by carefully encouraging the right kind of art, the right kind of society could then be produced—and he had a definite idea of what the right kind of art looked like. To him, the Parthenon was the peak of perfection, possessing a “sense of balance, rhythm, proportion, symmetry—resulting in a sense of form very different from any that the modern world possesses” (as cited in Frank, 2011, p. 31). Ross shared Norton's taste for works of antiquity¹⁵, frequently referring to classical texts and architecture in his writings and lectures. Ross also shared Norton's general distaste for modernity, often exhibiting a sense of nostalgia tinged with despair as he lamented the lack of true appreciation and interest among the public¹⁶. Looking back on Norton's lectures, Ross once commented: “My recollection of those lectures is still vivid because my interests and my work have in great measure proceeded

¹⁴There was a smattering of visual art being taught before Norton came on board. Ross mentions in his autobiographical notes that Charles Herbert Moore instructed “Free-Hand Drawing” in 1871, and John Knowles Paine served as a “Professor of Music and Watercolor,” in 1873. Norton was the first to teach under the umbrella of the Division of Fine Arts (Ross, n.d. a)

¹⁵In this respect, Norton differed from Ruskin, who preferred Gothic architecture to all else.

¹⁶This vague nostalgia mixed with dissatisfaction forms the tone of much of Ross' writing. He tended to idealize both classical civilizations and pre-western Japan, along with his own (admittedly impossible) utopian vision for society.

accordingly” (Ross, n.d. a). Although his instructional methods diverged from those of Ruskin and Norton, Ross remained in agreement with them on this central idea—that art had the potential to influence society for the better: “With these faculties we shall be able to discover Order and Beauty everywhere, and life will be happier and better worth living, whether we produce Works of Art, ourselves, or not” (Ross, n.d. c).

A careful distinction between art and design is important in understanding Ross’ goals and methodology. Ross never sought to teach or explain art or beauty; he sought to understand “Order,” and by that process to *discover* beauty. Beauty itself was not a thing to be understood:

I refrain from any reference to Beauty as a principle of Design. It is not a principle, but an experience. It is an experience which defies analysis and has no explanation. We distinguish it from all other experiences. It gives us pleasure, perhaps the highest pleasure that we have. At the same time, it is idle to talk about it, or to write about it. The less said about it the better. (Ross, 1907, p. 4)

He proposed to look at art from a different angle. Design, he argued, is what enables an idea to be effectively conveyed; without design, the truth of art remains hidden:

In Representation we are putting lines and spots of paint together for the sake of their meanings. Design in Representation means Order in the composition or arrangement of meanings. What we aim at is the Truth of Representation in a form of expression which will be simple, clear, reasonable, and consistent, as well as true. The attention must be directed to what is important, away from what is unimportant. Objects, people, and things represented must be brought out and emphasized or suppressed and subordinated, according to the Idea or Truth which the artist wishes to express. The irrelevant must be eliminated. The inconsistent and the incongruous must be avoided. That is what I mean by Design in Representation, the knowledge of Nature and Life presented in a systematic, logical, and orderly way. (Ross, 1907, p. 7)

Ross wanted to study the underpinnings of art—what makes art *work*. In order to even approach this question, he first had to make a semantic distinction between motive and execution, substance and form—between the ineffable, mysterious quality that

enables an artist to imbue mere objects with meaning (what he often called “genius”), and the technique, the execution of the idea. It is important to understand that Ross was not trying to dissect *art* as such. What he proposed to examine was “the technique of expression and nothing more than that. *That* is a matter of precise definition and analysis” (Ross, 1901, p. 358 [emphasis added]). In order to justly understand what Ross was trying to do, we have to follow him in making this distinction. Although he was himself sometimes less than fastidious in his own use of the terms¹⁷, his work itself was emphatically focused on design:

What we value in any work of art, apart from its motive ... is the design of it, which is revealed in the performance. By the design I mean the form in which the work is achieved, the terms or materials used, the arrangement of the terms or materials, the composition and connection of the parts, the relation of the parts to the whole, the organic unity of the whole. (Ross, 1903, p. 3)

For him, design was the interesting and, more importantly, the controllable part of art. Great art may be the result of genius, but its design and execution must always be the result of hard work. In differentiating between art and design, Ross was continuing, in his own way, Ruskin's teaching on perception and invention, the former of which could, and should, be taught in order to ensure a pupil's “seeing truly” (Ruskin, 1857, part viii):

The excellence of an artist, as such, depends wholly on refinement of perception, and it is this, mainly, which a master or a school can teach; so that while powers of invention distinguish man from man, powers of perception distinguish school from school. (Ruskin, 1857, part vii)

It was precisely these “powers of perception” that Ross intended to train.

¹⁷For example, in a talk titled “The Formulas and Standards of Art as Revealed by Tradition and Good Precedents,” Ross declared that “nothing is produced in Art, of real interest and value, which is not based upon scientific knowledge and technical understandings; understandings so specific and particular that they amount to prescriptions or formulas” (Ross papers, n.d.). In this instance Ross chose to break his own rule of distinguishing between art and design, possibly for dramatic effect.

It was Ross' ideas about *how* art could or should be used to improve perception that were so markedly different from those of his teachers. Throughout his tenure, Ruskin spoke out vehemently against the schools of industrial drawing, which made the mistake of "confusing art as applied to manufacture, with manufacture itself" (Ruskin, 1857, part vi). Ruskin continued:

The manuals at present published on the subject of drawing are all directed, as far as I know, to one or other of two objects. Either they propose to give the student a power of dexterous sketching with pencil or water-color, so as to emulate (at considerable distance) the slighter work of our second-rate artists; or they propose to give him such accurate command of mathematical forms as may afterwards enable him to design rapidly and cheaply for manufactures. When drawing is taught as an accomplishment, the first is the aim usually proposed. ... Of the fitness of the modes of study adopted in these schools, to the end specially intended, judgment is hardly yet possible. (Ruskin, 1857, parts v. and vi.)

For Ruskin, any system of instruction that could be mistaken for an exercise in "manufacturing" design was immediately at risk of undermining the noble goal of improving judgment. Ross would have denied that his methods had anything in common with "practical art," but his style, vocabulary, scientific pretensions, and formalist leanings all put his ideas at odds with those of Ruskin and his followers. Ruskin's (1908) objections to the South Kensington system reveal a deeper distaste for formalism in general:

For, indeed, the arts, as regards teachableness, differ from the sciences also in this, that their power is founded not merely on facts which can be communicated, but on dispositions which require to be created. Art is neither to be achieved by effort of thinking, nor explained by accuracy of speaking. (paragraph 12)

Ross made few particular declarations of Ruskinian influence after his student days. In fact, some of Ross' friends and fellow design enthusiasts claimed that his work as a theorist began to take shape only after he had "broken away from the shackles of

Ruskin” (Hopkinson, 1937, p. 543)¹⁸. Indeed, although Ross credited Charles Eliot Norton (and, by association, Ruskin) with starting him on the path of art scholarship, the over-arching ideas of Ruskinian philosophy did not extend much into Ross’ mature work, though some of the individual details certainly did¹⁹. For Ruskin, nature was the first and foremost thing; for Ross this was design:

Taking any instance of Order, whether in Nature or in some works of Art, the first thing to do is consider its terms—its positions, its lines, its areas, its measure and space relations, its tones and tone-relations—bringing every element to separate and exact definition. The next thing to do is to note every occurrence of Harmony, of Balance, of Rhythm—every connection making for consistence, unity, Order. (Ross, 1907, p. 190)

Ruskin, by contrast, opposed any sort of teaching by design. He was especially critical of the South Kensington system's attempts toward this end, blaming its ill-advised approach for all but ruining a generation of English art: “The Professorship of Sir Henry Cole at Kensington has corrupted the system of art teaching all over England into a state of abortion and falsehood from which it will take twenty years to recover” (as cited in Efland, 1990, p. 139). The South Kensington system approached art production as a branch of industry, whereas to Ruskin art encompassed the totality of human experience, and its only proper purpose was beauty. Ross did not see himself as contradicting this position. To his mind, his system did not govern by formula or rule, but by principle; its purpose was to educate and elevate.

¹⁸By the time of Ross’ death, Ruskin had fallen fully out of favor. His outright rejection of Modernism left the following generation with a distaste for his work, observable in the tone of the above quotation. This declaration by Ross’ eulogist probably has more to do with Hopkinson's own opinions about Ruskin.

¹⁹For example, Ruskin regarded the study of original works of art to be a vital step in refining one's skill and appreciation. Ross shared this belief, and spent a great deal of effort incorporating a study collection (most of which was acquired personally) into his classes; from these works his students learned to identify elements of good design. In fact, Ross felt that that observing and evaluating original works was so important that he made it the first objective of his classes. Ruskin brought in the study of original works only after extensive study of nature.

SUMMARY

Denman Ross stepped into his role as an art educator at a time when the field was ripe for change. Observing the rigidity and narrowness of industrial drawing encouraged him to create a system that could boast flexibility and universality. When he perceived that the academic methods of old Europe were out-of-date and entrenched in useless conventions, he was able respond by touting his own system as a fresh and innovative alternative. Ruskinian philosophy had always interested him, and he incorporated aspects of the teachings of Ruskin and Charles Eliot Norton in a way that showed his indebtedness while maintaining his own separate goals and interests.

Chapter 5: The Influence of Science on Ross' Methods

OVERVIEW

Denman Ross frequently emphasized the scientific nature of his work. In attempting to adopt a logical, methodical approach to art theory, he hoped to improve art both in terms of public appreciation and artistic creation. His ideas were in keeping with modernist notions about man and nature—that man possessed the power to master nature using reason as a tool. This chapter examines Ross' views on science and relates the conditions that informed Ross' understanding of scientific methods. It then looks into the ways in which his purported emphasis on science affected his own methods of visual analysis.

WHAT SCIENCE MEANT TO ROSS

It appears that Denman Ross' ultimate goal was to cultivate “the Love of Order and the Sense of Beauty,” and his chosen way of reaching this goal was through the utilization of science:

As science rises from particulars to what is general and universal, as she rises to the understanding of principles and laws, causes and sequences, she comes to a conception of nature as pure design. The statement of scientific truth becomes an illustration of pure design, and art and science become one. (Ross, 1901, p. 343)

Ross' choice of words here, characterizing human knowledge as an entity perpetually on the rise toward perfection and unity, helps to illuminate his attitude toward the work he performed. Ross saw science as a contribution to progress, aiding man's ascent from chaos and obscurity to a place of mastery over nature. Science was the tool by which such advancement could be accomplished. He was one of many individuals and groups enamored with this way of thinking as the twentieth century arrived. W.J.

McGee (1898), writer and ethnologist for the Smithsonian Institution, summed it up in his chronicle of the triumphs of the 19th century:

The sources of aesthetics and ethics have been successfully sought, the early steps in the course of industrial development have been traced, the beginnings of law have been analyzed, and the progress in the arts and industries, in sociology, in language, and in thought are convergent, rather than divergent like the lines of development among beasts and plants, and that the unification of ideas by telegraph and telephone and press is but a ripple marking the course of the great stream of human activity. (p. 319)

This forthright sense of linear progress toward Truth through Science was one of the strongest intellectual trends in the early modern era, and Ross continued to cling to it throughout his career. He ends *The Painter's Palette* (1919) with this stirring quote from Poincaré:

What we call objective reality is, in the last analysis, what is common to many thinking beings, and could be common to all; this common part, we shall see, can only be the harmony expressed by mathematical laws. It is this harmony then which is the sole objective reality, the only truth we can attain; and when I add that the universal harmony of the world is the source of all beauty, it will be understood what price we should attach to the slow and difficult progress which little by little enables us to know it better. (as cited in Ross, 1919, p. 41)

From this we can infer that when Ross wrote of “science,” he meant it in the humanist sense: knowledge that can be obtained by objective means and rationally explained by the intellect, resulting in the revelation of universal truths about the world. At times, he wrote as if he considered not art but science to be his true calling. When, in *On Drawing and Painting* (1912), he wrote, “Science has to do with things. It is impersonal and universal. Art means 'not things but thoughts.' What is the thought or idea? That is the question of art.” (p. 3; quotation from John Henry Cardinal Newman), Ross was not distancing himself from science, but from art—his work dealt not so much with art itself, but with the “things” present in art. He even went so far as to explicitly

describe *A Theory of Pure Design* (1907) as “a contribution to Science rather than to Art” (p. v).

In bringing science and art together, he claimed to continue a legacy originating in ancient Greece²⁰. In an article written for the American Academy of Arts and Sciences, Ross informs his readers of Plato's stance on the subject: “Socrates says: ‘If arithmetic, mensuration, and weighing be taken out of any art, that which remains will not be much’” (Ross, 1901, p. 358). Ross found this particular quotation so apt that he later repeated it in his introduction to *A Theory of Pure Design* (p. vi). Indeed, his concept of scientific methods seems to have come more from the ancients than from modern sources, for Ross does not appear to have followed many contemporary innovations in the fields of math and science²¹. He occasionally referred to ideas that had made their way into the popular culture, chirping about “survival of the fittest” to students preparing for a competitive exhibition (Ross, 1927), or praising the merits of the golden mean as a tool for good design²². He did not, however, pursue modern scientific ideas beyond their applications in the humanities. Design was the focus of all his effort and energy.

EDUCATIONAL INFLUENCES

In his enthusiasm for scientific methods he was in step with many scholars of his day. He first encountered the idea of combining science and art while a student at

²⁰This was a typical modernist notion, and more closely resembled Enlightenment thinking, but Ross had little, if anything, to say about that era in his own writing. He looked mostly to the classical Greeks for corroboration on his ideas and attitudes, but the influence of early modern humanism is evident in the content of his writing.

²¹Ross did, however, have a great deal of contact with other design theorists who were, themselves, interested in the idea of bringing modern science into the humanities.

²²What is now commonly referred to as the “golden mean,” Ross usually spoke of as an aspect of “dynamic symmetry,” following the research of his friend and fellow design theorist Jay Hambidge. See Frank, 2011, chapter 4.

Harvard. The history department taught according to the German model, derived largely from the methods of Leopold von Ranke, which began with immutable facts and moved methodically to transcendent principles. Ross received his doctorate in history, with some promise of achievement in the field. His dissertation, *Early History of Land-holding Among the Germans* (1883), after an initially critical response, drew lasting praise from his associates, both for its audacity (the premise of his thesis, that pre-feudal German property customs were based on private ownership and inheritance, not on communal legislation, flew in the face of previous assumptions on the subject) and for the “scientific” process by which he had conducted his research, a process advocated by Henry Adams²³. Ross described the process of writing his dissertation as an orderly, logical undertaking, the conclusion of which was inevitable, given the facts:

The collections of early records were, most of them, read through. Passages bearing upon the subject of investigation were noted. They were then carefully classified; passages establishing certain facts being grouped together. A general theory was then formed, to bring the facts thus collected into a natural order and relationship. (Ross, 1883a, pp. iii-iv)

By the time Ross received recognition for his historical work, however, Ross had lost the taste for it and shifted his efforts to another seemingly unrelated field. Two years after publishing his dissertation, he wrote to a friend:

I wish I could write an interesting book. My books are so hard to read, so dull. I must try to do better when I come home. I am not going to write anymore about land-holding. I have said all I have to say on that subject. I am going to write about painting and pictures. I have been slowly coming to this point of departure and I think wisely. I am certainly more interested now in Art than in anything else, and I believe now I have something to say about it worth saying. (cited in Frank, 2011, p. 43)

²³The Harvard history department was, for most of Ross’ time as a doctoral student, headed by Henry Adams, who strongly advocated of the use of the “scientific method” in historical study. Adams was not, however, on Ross’ doctoral committee, as he was at that time on leave from Harvard.

Ross had learned much in the course of his historical studies, and proceeded to apply this knowledge to fine art. He had become convinced that not only art but life itself could be elevated and improved through careful scientific study. On this subject the somewhat stiff Bostonian at times became practically poetic: "With these faculties we shall be able to discover Order and Beauty everywhere, and life will be happier and better worth living" (Ross, n.d. c).

Another reason for Ross' preoccupation with science lay in his acceptance of a materialist worldview then popular, although for him materialism served more as an aesthetic principle than an epistemology; materialism suited his tidy, simplistic worldview and provided a convenient framework for his observations. It would be an overstatement to say that Ross lived out materialist principles in any systematic way, but it was the closest thing he had to an overarching life philosophy²⁴. At times, his application of the concept made little practical (or theoretical) sense, as in the following passage from his personal notes:

Your visual interests have no existence until you have given them a visible form of expression. We are so much in the habit of expressing ourselves by talking or writing that we talk and write about painting when our talking and writing is absolutely irrelevant. (Ross, n.d. g)

At first glance, the above statement seems self-negating—in discounting “talking and writing about painting” he was disparaging his own livelihood—but his intention was to emphasize the primacy of design over rhetoric. Ross felt strongly that a visual idea must find its complete expression in the tangible form of the composition itself—any dependence on outside explanation indicated an insufficient or poorly executed design. By asserting that an artist's creative vision had “no existence” outside its visible

²⁴Ross was raised, like any good upper-class Bostonian of the time, in the Unitarian church. However, there is no reference, either in his published texts or his personal notes, to any recognizable religious concepts or ideals.

expression in the form of design, Ross was attempting to frame this idea using the vocabulary of materialism²⁵. In an exploration of representative drawing, he described the process in terms of stimulus and response:

The sight of a circle impels the painter to make a circular mark [sic] While the sight of a square impells [sic] him to make a square mark. When the sight of a dark spot impells [sic] him to press on his pencil and the sight of a certain red impells [sic] him to mix venetian red [and] yellow ochre in certain proportions and to spread the mixture on his paper or canvas. (Ross, n.d. e)

This representation of the artist as a pseudo-automaton, responding to visual stimuli by neurological reflex, reflects Ross' desire to pare down the process of art creation into a logical series of discrete actions. Materialism provided him with what seemed a promising approach for accomplishing this. Design existed in the material world as a combination of formal qualities, all of which were observable, definable, and immutable, and it was the formal qualities of art that he chose to focus on in his work—to the exclusion of other concerns. In a section of his journal titled “Drawing and Coloring without expression,” Ross gives directions on how to create a line drawing devoid of any but formal qualities; he later dedicated *Illustrations of Balance and Rhythm for the Use of Students and Teachers* (1900) to the same end.

Ross' materialist leanings came at least in part from his connection with Hugo Munsterberg and George Santayana in the Harvard psychology department²⁶. Study in that department was primarily concerned with ascribing physical explanations to abstract phenomena, such as aesthetic experience. Munsterberg's so-called “laboratory method²⁷”

²⁵Genuine materialism would presumably reject art altogether, seeing aesthetic experience as a mere neurological event.

²⁶Harvard's psychology department was among the first of its kind. Previously, psychology had been a strictly abstract discipline, a branch of philosophy. The formation of Munsterberg's psychology department marks the advent of “applied psychology;” that is, the attempt to understand mentation by conducting scientific experiments.

²⁷Munsterberg brought the laboratory concept to the U.S. from Germany, where he studied under Wilhelm Wundt, widely regarded as father of modern psychology.

employed the scientific method in an attempt find a physiological basis for intellectual activity:

When it comes to the practice of Design our aim is to achieve the consistency, harmony, and beauty of mathematical laws so far as we possibly can. Mathematical laws are all that we have to depend upon in a world of sense impressions and accidental occurrences. (Ross, n.d. c)

Conspicuously absent from Ross' education was any rigorous training in mathematics or experimental science. He explored such disciplines only as far as they seemed applicable to the humanities, which limited his understanding of established practices and standards. He worked doggedly to construct a comprehensive system of analysis that would provide a rational basis for the process of art creation, but when he sought to appropriate methods of mathematics and science the results often lacked the clarity and universality of these disciplines, which likely affected his appeal outside the limited sphere of art theory and education.

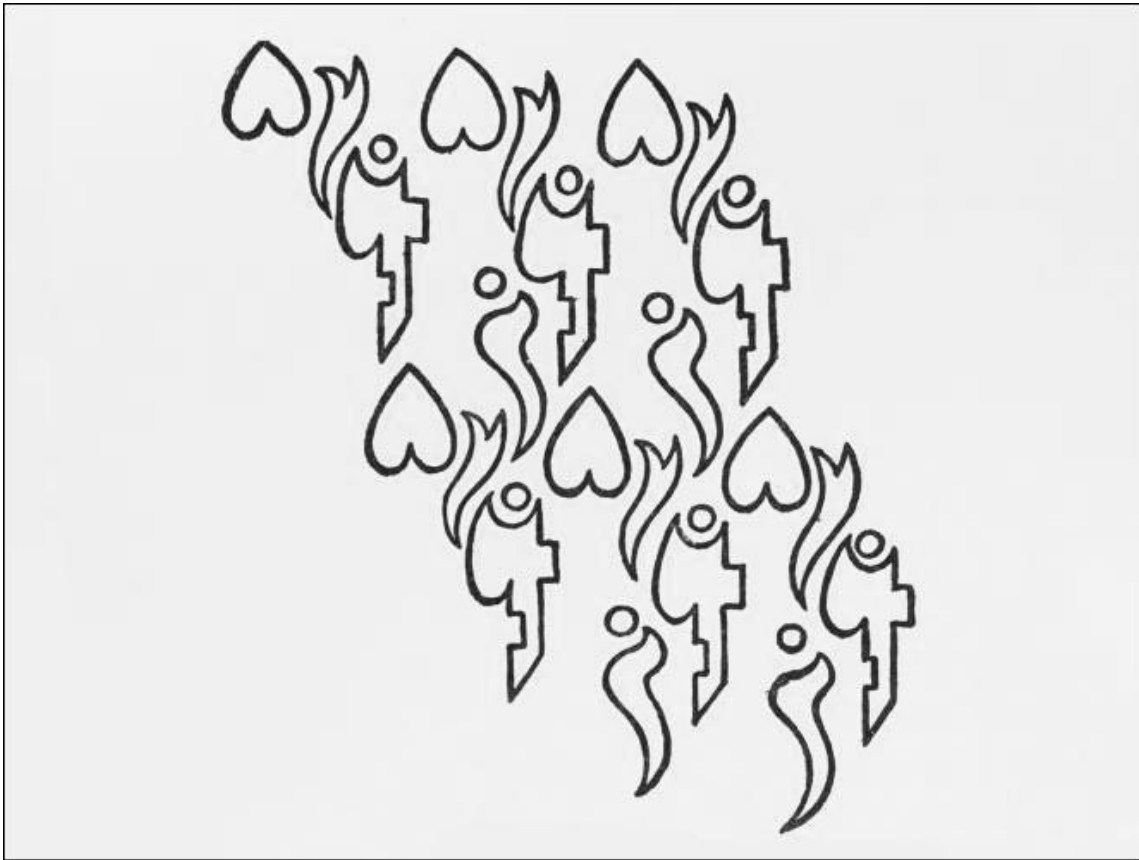


Figure 2: Illustration using outlines to express harmony through repetition (Ross, 1919, p. 123).

ROSS' METHODS OF VISUAL ANALYSIS

Ross' methods of visual analysis were aimed at elucidating the qualities of good design, and much of his work did provide readers with useful tools for understanding or creating a design-minded product. Overall, however, his work reveals a disparity between his lofty goal of universality through science, and his own limited ability to hold to standards of rigorous scientific practice.

In his work on color, Ross focused on color theory²⁸, a subject that interested him greatly. He dedicated a disproportionate part of his writing to the study of “tone

²⁸Significant advances in color theory were made by, among others, Eugène Chevreul, Gustav Fechner, and Hermann von Helmholtz; important contemporaries of Ross included Albert Henry Munsell (artist;

relations,” often working out problems and ideas in his own paintings. He eventually developed various methods for creating what he called “set palettes,” a kind of tool for exploring color relationships:

After more than twenty years given to the consideration of this question and to experiments in the use of set-palettes, I am fully persuaded that it is perfectly possible to make of the painter's palette an instrument of precision,—an instrument which will serve him both as a mode of thought and means of expression. He will then use his palette very much as the musician uses his voice or the violin or the piano. (Ross, 1919, p. vi)

His goal was a worthy one—and to a limited extent he did achieve it. Over the course of his career Ross published two distinct “palette-systems,” which he called the “System of a Suitable Triad Repeated” and the “System of the Spectrum Band with Complimentaries in Corresponding Values.” The former was introduced in his book, *On Drawing and Painting* (1912); the latter, in *The Painters' Palette* (1919). He described his System of a Suitable Triad Repeated as “a certain triad of colors, a triad in which there is a complementary balance, [which] is repeated at equal intervals of the Scale of Values between the extremes of black and white” (Ross, 1919, p. vi). His System of the Spectrum Band with Complimentaries in Corresponding Values, which he considered to be the more logical and practicable, was a “metrical system in tone-relations” and aided the artist in the use of complimentary colors on a limited scale (Ross, 1919, p. vi). He devoted a great deal of attention to the task of “neutralizing” a color by the addition of its color complement:

The neutralizations and neutrals produced by the mixture of complimentaries are far more interesting than any neutrals which can be produced by mixing colors with Black and White; or Black and White, the one with the other. The vibration

instructor at the Massachusetts Normal Art School, inventor of the photometer), and Ogden Rood (author of *Modern Chromatics*, 1879).

of the complimentary particles²⁹ gives to these neutralizations, and even to what appears to be perfect neutrality, an unmistakable liveliness. (Ross, 1919, p. 15)

To his credit, Ross chose to eschew any serious investigations into the more technically demanding field of additive color; he confined his writing to color pigments and their effect on the human visual experience. He hoped to present a system that would enable the painter to “make the production of effects of light and color a well ordered procedure,—a procedure which everyone can understand and follow” (Ross, 1919, p. v). This procedure was based on what were by his time widely accepted foundational concepts of color theory: that there are twelve basic colors from which all possible tonal relationships can be derived: red, red-orange, orange, orange-yellow, yellow, yellow-green, green, green-blue, blue, blue-violet, violet, and violet-red; that every tone has three qualities: value, color, and intensity; and that values are described in terms of relative lightness or darkness, colors as hot or cold, and intensity on a scale from intense to neutral³⁰.

²⁹In his *Treatise on Physiological Optics* (1910), German scientist Hermann von Helmholtz showed that colors formed by light (additive colors) and those formed by pigments (subtractive colors) operated differently. Here Ross likens pigments to light waves, revealing that he has read, but not fully understood, the work of Helmholtz and others.

³⁰Despite this color arrangement's inclusion of three distinct aspects with continuous gradients, Ross resisted the idea of representing color relationships in three dimensions. His friend Albert H. Munsell, by contrast, devised a spherical color chart that is still in wide use today. Munsell's system is an example of a thoroughly scientific examination of color perception with both a rigorous scientific foundation and widespread practical application.

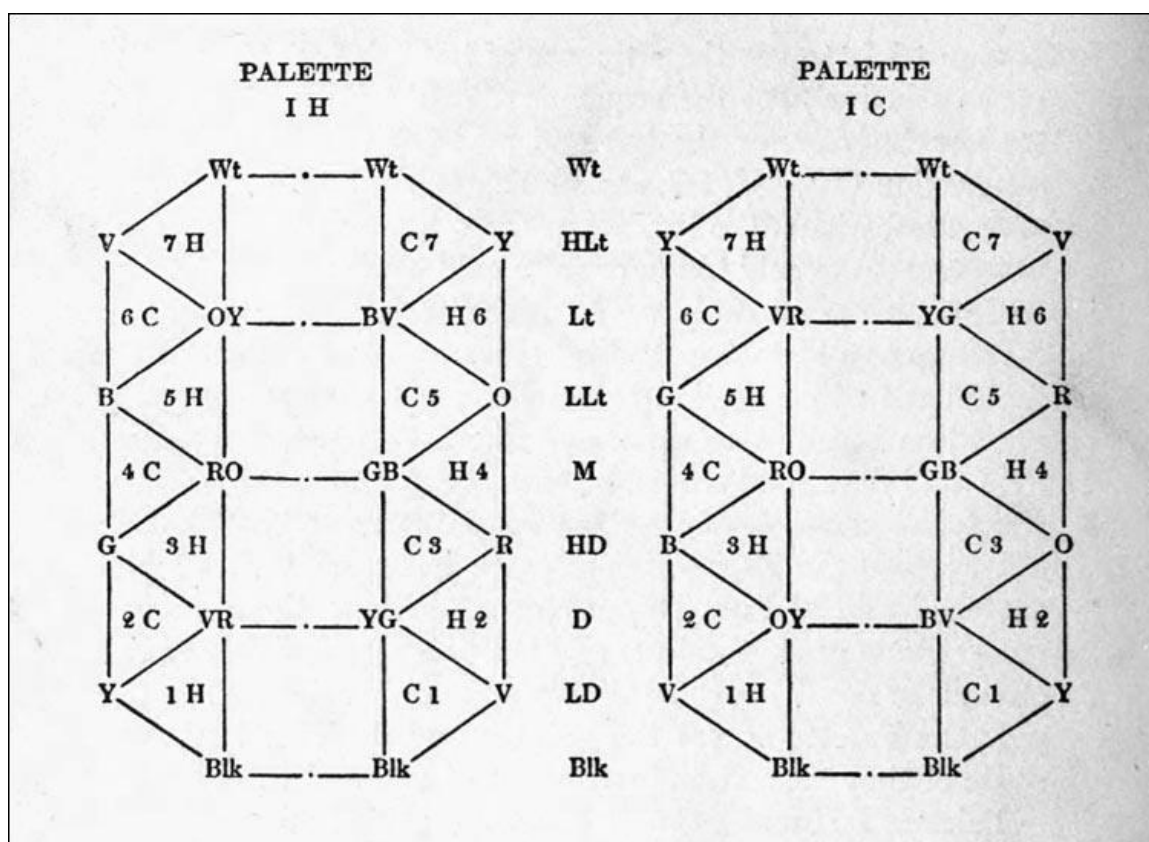


Figure 3: Diagram of a set palette employing the System of the Spectrum Band with Complimentaries in Corresponding Values (Ross, 1919, p. 28).

On these ideas Ross based both his System of a Suitable Triad Repeated and his System of the Spectrum Band with Complimentaries in Corresponding Values. The particulars of the systems differed, but they both served the basic purpose of guiding the painter through the process of choosing and mixing pigments in a way that controlled the qualities of individual tones as well as the relationships between tones while also moderating the overall number of tones. He called the result a “set palette”: that is, a limited but harmonious group of colors, the use of which would encourage creativity by freeing the artist from the overwhelming task of fabricating his own color palette from an unlimited array of possibilities:

So wide a range of tones may be more embarrassing than helpful. With a palette of infinite possibilities, the selection of particular tones for particular purposes becomes very difficult and definite thinking in tone-relations impossible. It is only when we have very much reduced the possibilities of the palette that we can think definitely in tone-relations and are able to decide without hesitation what tone to use in any particular case. A palette of infinite possibilities is unnecessary and undesirable. (Ross, 1912, p. 44)

Inasmuch as it served to eliminate the pressures of generating a palette unassisted, Ross' system worked well and reliably. None of the core concepts are his own, but he applies them thoughtfully. He also included a great deal of practical information concerning the purchase of pigments and preparation of materials, some of which would be useful even today:

If it is desirable to keep the tones on the palette from day to day, the palette, which is of glass, may be immersed in clear water. That means that a metal or china dish large enough to hold the glass palette will be required. The agate-ware baking-pans are very good for this purpose. ... It will be necessary to moisten the tones with a little linseed oil and to soften them with a palette knife. Only the very best of linseed oil should be used. (Ross, 1912, p. 37)

Ross also included exhaustive descriptions of "the colors in pigments and pigment mixtures." About the color red he writes:

Red, the color which we see in rubies, appears in a variety of pigments and pigment-mixtures. The mixture of Indian Red, Chinese or English Vermilion, and a little Madder or Alizarin Crimson gives a fine quality of red. A touch of French Ultramarine is sometimes desirable. Red occurs in the value High Dark, approximately, and is neutralized by a Green of the same value,—a Green which may be produced by a mixture of Vert Emeraude (Green Oxide of Chromium, Transparent) with a very small amount of Zinc White. Green is the clear cool color we see in the emerald; a color which cannot be produced by the mixture of Vert Emeraude with Lemon Yellow, the mixture commonly used. A mixture of Cerulean Blue with Lemon Yellow comes very near to it. (Ross, 1919, p. 5)

Ross' writing often comes across as needlessly thorough, but he considered this kind of specificity to be necessary in order to create a clear, comprehensive (and consequently, to his mind, scientific) understanding of the essentially subjective experience of evaluating

color. Thus, he managed to be quite inclusive in one way, but quite limited in another: Painters of a similar mind and with similar access to “only the very best” materials would have found his recommendations to be at least applicable to their interests, but his reach stopped there. Professionals with broader practical interests (textile designers, for instance) had a great need for a system directed toward organizing and describing subtractive color. But, despite all his posturing about the importance of universality, Ross failed to create a system that could be applied outside the narrow field of painting.

Color was one of several components of Ross’ broader concept of pure design. The set palette was only “an instrument with which various forms of Pure Design, the repetitions, the sequences (progressive or rhythmical) and the balances (axial or radial, obvious or occult) may be simply and easily achieved” (Ross, 1919, p. 27). The following is an exercise in pure design, from a paper Ross presented to the American Academy of Arts and Sciences:

The spot of paint is three things: it is a tone, a measure, and a shape. By *tone* I mean the pigment material used in drawing the measure of the spot and its shape. By *measure* I mean the area covered by the spot, its size. By *shape* I mean its outline, or contour. Put a spot of paint upon a piece of paper, then change (1) its tone alone; (2) its measure alone; (3) its shape alone; (4) its tone and measure, leaving its shape unchanged; (5) its measure and shape, leaving its tone unchanged; (6) its tone and shape, leaving its measure unchanged; (7) change its tone, its measure, and its shape, producing an altogether different spot. (Ross, 1901, p. 539, emphases in original)

Writing about visual elements in this exaggeratedly reductionist way, Ross instructs the reader to create a scale of 17 values (made up of spots of paint that are in all other ways identical, thus controlling for one variable) and observe the effect of each value when considered alongside a neutral ground color. With a tone of absolute certainty in the reader's answer, he asks: “What is the result of all these forces of attraction, as they act upon the eye?” (Ross, 1901, p. 360). In this way Ross attempts to lead the reader to his

conclusion, that “different values exert different degrees of attractive force, ... this force is determined in each case (other things, measure, shape, and color, being equal) by its contrast with the ground-tone upon which it has been drawn³¹” (Ross, 1901, pp. 359-360). He follows with a system of notation, devised by himself, which assigns a number to each value, imposing upon the exercise a veneer of mathematics:

In order to distinguish the different values of the scale, we will call the middle value zero (0). The values above the middle value we will call 1, 2, 3, etc., *above*. The values below the middle we will call 1, 2, 3, etc. *below*. The values above can be written thus: 1, 2, 3, etc.; the values below thus: 1, 2, 3, etc. The values having the same force of attraction are, then, those having the same numbers: $\frac{1}{1}$, $\frac{2}{2}$, $\frac{3}{3}$, etc. The numbers are the measures of the contrasts, and of the forces of attraction depending upon the contrasts. (Ross, 1901, p. 360)

Thus Ross invents a totally original notation for a concept already established in mathematics for more than a millennium: negative numbers.

³¹This idea dates at least to Leonardo da Vinci, who observed that “among colors of equal perfection the one which will appear to be the most excellent is that which is seen in the company of the direct opposite color (*retto contrario*)” (cited in Ackerman, *On Early Renaissance Color Theory and Practice*, 1991, p. 176).

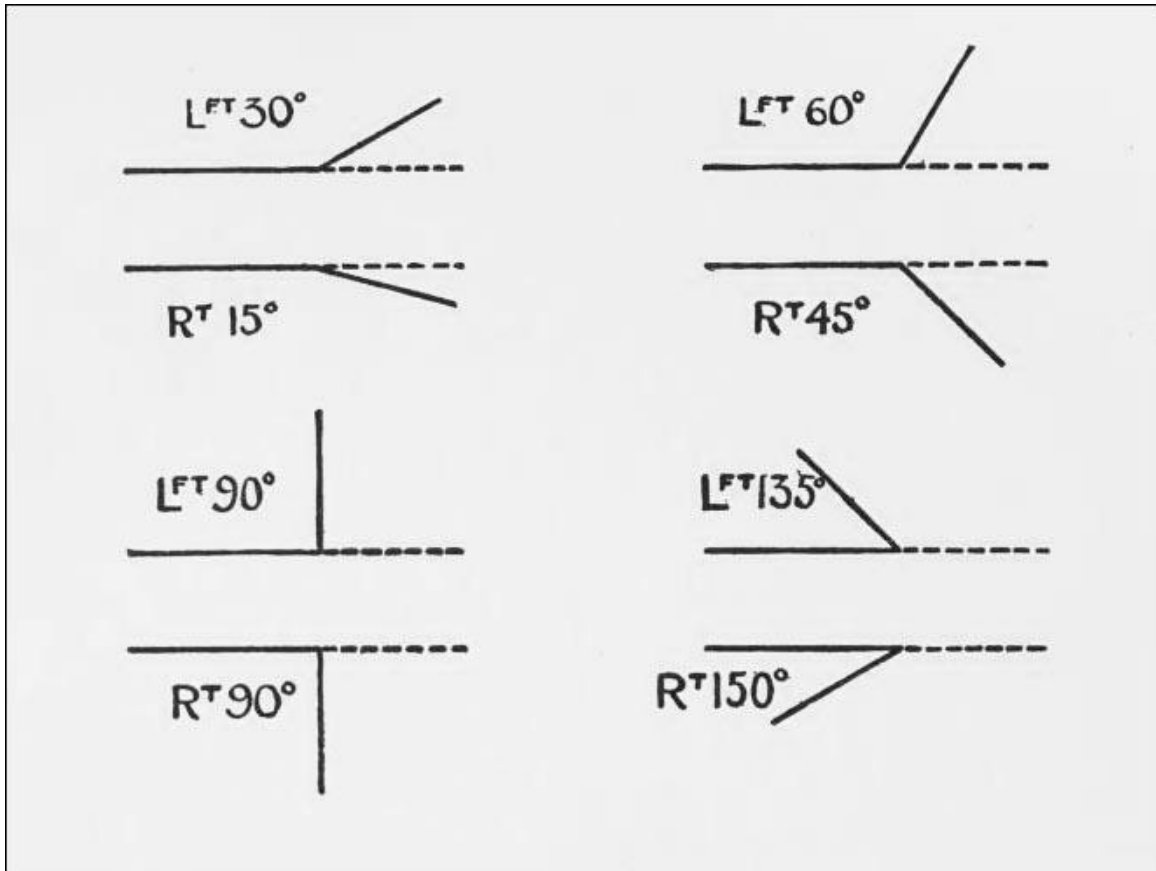


Figure 4: Diagram demonstrating the use of angles to influence the character of a line (Ross, 1919, p. 38).

The problem with Ross' approach, in this and similar instances, lies in his lack of scientific or mathematical training. He tries to remove subjectivity from the experience of color by converting colors to numbers, even to the point of assembling an elaborate scheme for arranging all the possible colors of paint in a two- or three-dimensional array; this is a logical goal, but he goes about it with virtually no understanding of abstract mathematical spaces, and so arrives at an unnecessarily obtuse system that seems to have no use outside this one isolated exercise. In this respect, Ross falls sadly short of his goal of establishing a comprehensive system for the widespread "Scientific study of Design,

as a branch of Mathematics” (Ross, n.d. f). His exercises would not have served well as a basis for the mathematical study of visual design.

When guiding the student through a more comprehensive process of visual analysis, Ross continues to reveal a dissonance between the tone of his declarations and the actual content of his exercises. His directions have all the certainty of an objective exercise, but with little clarity:

Taking any instance of Order, whether in Nature or in some work of Art, the first thing to do is to consider its terms,—its positions, its lines, its areas, its measure and space-relations, its tones and tone-relations,—bringing every element to separate and exact definition. The next thing to do is to note every occurrence of Harmony, of Balance, of Rhythm,—every connection making for consistency, unity, Order. In that way we shall get an exact knowledge of the case. We shall know all the facts, so far as the terms and the principles of Design are concerned. That is what I mean by analysis. (Ross, 1907, p. 190)

Ross believed that it was, indeed, possible to obtain “exact knowledge” of an artwork's elements and principles, and he attempted to provide the charts and diagrams and descriptions to bring this about. He seemed to function under the assumption that if he called his opinion *fact*, then it would be so. For example, when writing about “the order of rhythm in positions,” he asserted that “the type of movement which is caused by a gradual crowding together of attractions” has a predictable effect on the eye, and will be uniformly interpreted as follows:

* * * * * * *

Fig. 38

There is nothing in this series of dots but the harmony of corresponding attractions and intervals repeated in a harmony of direction. If, instead of the repetition of equal intervals, we had a regular progression of intervals, either arithmetical or geometrical, we should feel a movement in the direction of diminishing intervals.

* * * * * * * * * *

Fig. 39

In the above example the changes of interval are those of an arithmetical progression.

* * * * *

Fig. 40

In Fig. 40 the changes of interval are those of a geometrical progression. (Ross, 1907, pp. 26-27)

Ross presents as an immutable truth that the above dots will appear to be moving from the right to the left, from where they are sparse to where they are crowded; he leaves no room for other interpretations. Where there is a greater number of “attractions,” there the eye is drawn, and that is that. Any potential contradiction is explained away as an accident of vision, to be ignored: “The movement to the left through these sequences is, no doubt, somewhat checked or prevented by the habit of reading to the right” (Ross, 1907, p. 27).

The above exercise exemplifies a pattern typical in Ross’ work: He introduces an assertion, then proceeds to demonstrate its meaning with diagrams and instructions created under the unquestioning assumption that his claim was correct. In this way he mistakes rhetoric for scholarship—starting with a conclusion, then forcing his “studies” to prove that conclusion. The result is an inflexible and occasionally arbitrary system.

In his pursuit of the Order which must always accompany Beauty, Ross looked to geometry³² as a source of structure and discipline. Although he dealt with the subject in his published work relatively briefly compared with the amount he wrote on color³³, Ross

³²Euclidian geometry only; he never refers to the contemporary developments in non-euclidean geometry.

³³He devotes scarcely 1½ pages of *A Theory of Pure Design* to “the Study of Order in Nature and in Works of Art” (p. 190), compared with 5 chapters on color.

believed that in order to recognize and appreciate instances of harmony, balance, and rhythm, one must study space-relations, both in nature and in art:

In connection with the practice of Pure Design, as I have described it,— the composition and arrangement of lines and spots of paint; of tones, measures and shapes: this in the modes of Harmony, Balance, and Rhythm, for the sake of Order and in the hope of Beauty,— the student should take up the study of Order in its three modes³⁴, as revealed in Nature and achieved by Works of Art. (Ross, 1907, p.1)

In his use of geometry he saw himself as following in the footsteps of the “Masters of the Renaissance,” who “used a web of squares ... constantly” for purposes of “visual suggestion and stimulation,” as well as image enlargement (Ross, n.d. h)³⁵. He was not alone in his endeavor to revive the practice; geometry and its relationship to nature and visual art was a subject of immense interest to a number of artists, architects, and design theorists at the beginning of the twentieth century³⁶. Ross’ contributions were well respected in this circle. He also did much to facilitate conversation on the subject by organizing lectures, recommending fellowships, and even providing monetary support to scholars. One such scholar was Jay Hambidge, whose theory of “dynamic symmetry” was based on measurements and historical evaluations of classical architecture, sculpture, and ceramics³⁷. Hambidge's work was widely discussed; Ross used Hambidge's method of geometric analysis as the basis for his own process. Ross exhibited a selection of his

³⁴Five years later, in *On Drawing and Painting*, Ross refers to the three modes of order as “Repetition, Sequence, and Balance” (1912, p. 60).

³⁵A more recent precedent for the use of geometry was set by Walter Smith and the South Kensington System as well as Johann Pestalozzi and his colleagues, but Ross never mentions this commonality.

³⁶Geometry emerged as a topic of importance to many artist and theorists at the turn of the twentieth century. Frank (2011) argued that geometry provided a flexible means of addressing questions about unity and order in art, and of improving on the past---both central modernist goals. Among those who incorporated geometry into their work (though in different ways and with different purposes) were Le Corbusier, Frank Lloyd Wright, and many of the so-called “Ashcan School,” as well as Ross and his close associates, Samuel Colman, Jay Hambidge, and Hardesty Maratta (chapter 4).

³⁷He published two books on the subject, *Dynamic Symmetry: The Greek Vase* (1920), and *The Elements of Dynamic Symmetry* (1926), as well as many pamphlets and articles.

own work at the Boston Art Club (1922), and again at the New York Century Association (1923). These exhibitions were less a showcase of artwork than an explication of Ross' method of geometrical analysis with visuals:

I then look at my subject and make up my mind which one of many possible diagonals will be the best one for the purpose. I draw that diagonal and another to balance it and reciprocal lines crossing the diagonals at right angles. These six lines will give me directions and angles of a single right angle triangle and are all that I require. (Ross, 1923, pp. 4-5)

In other words, he found a dominant diagonal line present or implied in a composition, marked it, then looked for a second such line inclining the other way. Next, he connected those two lines with a third line, drawn at a right angle to one or the other—creating a right triangle. He then reiterated the triangle by drawing other lines parallel to (or reflecting) these three, covering the image with a grid of lines indicating what he perceived to be the chief directions of linearity in the composition. The result was essentially a compositional diagram superimposed over the two-dimensional image.

He also frequently used a triangular matrix as an armature when laying out a sketch:

In drawing from the imagination it is very helpful to draw over a radial symmetry preestablished on the paper. There are three radial systems which may be used: either the System of the Octagon, with its radial angles of 90°, 45°, and 22 ½°, or the System of the Hexagon, with its radial angles of 90°, 60°, 30°, and possibly 45° and 15°, or the System of the Pentagon, with its radial angles of 90°, 72°, 54°, 36°, and 18°. The directions and angles of the system which is used will be found very suggestive and stimulating to the visual imagination. Even with nothing more than a web of squares on your paper it will be far easier to visualize a subject than would be without it. (Ross, n.d. h)

Here Ross contends that working from a geometrical foundation freed rather than restricted an artist's creativity, just as the set-palette did. The basic idea advanced by Ross, Hambidge, and their set was that geometry followed laws and principles inherent in

nature, and so had the ability to serve as a bridge between the natural world and the constructed world. By applying it to art, order and beauty could finally find resolution.

It is clear from the content of his textbooks that Ross intended his work to address the practical problems of art creation, yet in his commentary he frequently disparages the “purpose of service or utility” (Ross, 1907, p. 6) in art. He saw no contradiction in this—he thought of his design exercises not as works of art but as tools for producing and improving art, and in this way they still served a higher ideal: “Order and Beauty for the sake of Order and Beauty” (Ross, 1907, p. 6). Such a lesser result as “utility” was acceptable as a means, but never as an end, regardless of the process or tools employed. He was “willing to allow that Pure Design may be an Applied Art,” but only in the sense that it could be considered “Art applied in the service of Humanity, its purpose being to bring pleasure into the human experience” (Ross, 1907, p. 6). In this respect, Ross did think like a scientist, seeking universal truths with beauty as his motivating ideal. (By contrast, the practical, problem-solving motive he so derided might be called that of an engineer.) Ross’ idea of art and science was so lofty, however, that he denigrated any result other than “Order and Beauty.” He seems to have thought that any concern with “service and utility” would corrupt the product entirely, rendering it something other than art—mere industry. But in fact, in the sciences the exploration of natural principles very often leads to the development of new technologies and applications. By refusing to see how beauty and practicality can be related, Ross failed to acknowledge the broader potential of design.

As it was, however, Ross’ system had a significant following in its time, although not outside the humanities. The people who took his classes and read his books had, we can assume, little training in science or mathematics, and few aspirations toward that end. So while Ross’ shortcomings as a scientist may have prevented his ideas from gaining

ground in serious scientific circles, they had little or no effect on his influence as a teacher of design. In this sphere, he was well-regarded and had a strong following of students from all over the United States.

SUMMARY

Understanding the role of science in Denman Ross' work is vital to understanding his methods of visual analysis. Ross looked at science as a mode of expression, rather than as an exacting and strictly defined discipline in its own right. His use of scientific language lent his work an air of gravity and universality, and enabled him to express his ideas with thoroughness and some specificity, but his lack of rigorous scientific or mathematical training often showed itself in his heavy-handed and occasionally awkward descriptions of the methods of pure design. This shortcoming may have kept his work from capturing a lasting audience outside the sphere of art and design, but did not affect his influence within his own field. Through his Harvard courses, he was able to reach a wide audience of art educators.

Chapter 6: Ross' Impact on Art Education

OVERVIEW

Denman Ross' influence as an art educator was not limited to Harvard faculty and students. Ross taught additional courses on design as part of the Harvard summer school program, which was open to non-matriculated students. As a result, Ross was able to teach pure design to students and artists from around the country. This chapter examines the content of Ross' courses, which sought to train the faculty of appreciation by way of pure design exercises, analysis of great works of the past, and independent artistic practice. It then moves on to trace Ross' influence on the field of art education through the work of his students, many of whom were themselves significant educators and administrators.

INTRODUCTION

Denman Ross' theories were not perfectly consistent, nor flawlessly constructed. They were, however, built around a compelling idea—that design can and should be taught. His methods may seem unnecessarily rigid when viewed from a post-modern perspective, but they were relevant to the needs and interests of art educators at the turn of the twentieth century. In *A History of Art Education* (1990), Efland dismissed Ross' influence on the grounds that “he was not a teacher of teachers” (p. 179). While it is true that Ross did not teach teachers on the scale, or with the verve and enthusiasm, of Arthur Wesley Dow, Ross did indeed teach not only teachers, but artists, artisans, and architects in his capacity as a professor at Harvard. His work was also referenced in widely-used teaching materials and textbooks, suggesting that Ross' ideas were accepted within the mainstream of art education and considered suitable for classroom application.

HARVARD COURSE—CONTENT

For much of his teaching career, Denman Ross taught design not in Harvard's Fine Arts Department but in the Architecture Department. He was brought to Harvard as an instructor in 1899 by department head H. Langford Warren as part of his strategy to pull American architecture away from imitation and toward a more focused American style. Ross' methods and ideas were well suited to Warren's vision for architecture in the twentieth century:

What we need is to understand more and more fully those fundamental principles of our art which underlie the best work of all times and all styles ... to use these forms in our own work freely, varying from them not capriciously, but according to principle, as changed conditions, changed modes of construction, changed ideals seem to require. (as cited in Frank, 2011, p. 177)

Ross met success during his time in the Architecture Department. His classes were popular, and two of his books, *Illustrations of Balance and Rhythm for the Use of Students and Teachers* (1900), and *A Theory of Pure Design: Harmony, Balance, Rhythm* (1907), were published during his tenure there. Frank (2011) credits Ross with shaping the careers of architects Fiske Kimball, Henry-Russell Hitchcock, and Emil Lorch, among others.

Ross was asked to join the Fine Arts Department only after the departure of Charles Moore from his position as lecturer and director of the Fogg Art Museum in 1909³⁸. Moore's replacement, Edward Forbes, embraced formalist methods, though not to the exclusion of historical and material considerations—and saw Ross' goal of “strengthening the faculties” as a vital part of training students to discriminate and create

³⁸It is unclear exactly why Moore opposed Ross' inclusion in the Fine Arts Department. Moore taught a course similar, at least in name, to Ross': “Principles of Design in Drawing, Painting, Sculpture and Architecture,” and previous to his own inclusion in the Fine Arts Department, he had taught at Harvard's Lawrence Scientific School, so it is unlikely that he stood categorically against the combining of science with art. He, like Norton, was a devoted follower of Ruskin, and apparently perceived Ross' approach to design as an affront to those teachings. Ross himself never mentioned his obvious exclusion from the department, and only ever referred to Moore as an esteemed colleague.

on their own. Ross' course in design was compulsory for all fine arts majors, and remained open to architecture students despite the change of department personnel.

The course Ross originally taught in the Department of Architecture was titled "Theory of Design: Pure Design (Balance, Rhythm, and Harmony) and Design in Representation," though it was usually known simply as "Architecture 7." In the Fine Arts Department, a later version of the course was titled "Fine Arts 1a: Principles of Drawing and Painting and Theory of Design." In Ross' classes the goal of study was nothing short of mastery:

The Art must be mastered before it can be successfully used. It is mastered by scientific methods, by the analysis of examples and by experimental practice, and it is the business of the teacher of painting to help the student in this study of examples and this practice as far as he can. (Ross, 1912, p. 9)

Ross sought to accomplish this in three ways: by lecturing and providing exercises on concepts of pure design; by exposing the students to a study collection, made up of examples that showed the attributes of pure design; and by encouraging students to incorporate the practice of pure design in their own experiments.

LECTURES ON DESIGN AND ITS IMPORTANCE

The content of Ross' lectures and tests was similar to that of his books. He always kept the art object at the forefront of the students' focus. According to his philosophy, the idea expressed by an object was absolutely predicated by its design. Its history, concept, or intention was relevant only inasmuch as it was reflected in the hard "facts of vision" present in the design itself. He defined design explicitly as "Order in human feeling and thought and in the many and varied activities by which that feeling or that thought is expressed" (Ross, 1907, p. 1). He often likened the practice of a visual

artist to that of a writer—that is, they both give form to an abstract idea by applying various “terms of expression” (Ross, 1907, p. 4). But while linguistic expression was readily understood by the public, concepts of design in visual art were too abstruse:

The reason why the appreciation of excellence in speech and in writing is so widespread is due to the fact that we all speak and write, constantly, and try, so many of us, to speak and write well. The reason why there is so little appreciation of excellence in other forms of art is due to the fact that the terms are not in general use and the principles not understood. (Ross, 1907, p. 193)

He also extended this analogy to the appreciation of musical composition:

Lines and spots of paint can be arranged in forms of Order just as we arrange sounds in Music, for no other reason than to express the Love of Order and the Sense of Beauty. The appeal of Music is to the ear. The appeal of Drawing and Painting in Pure Design would be to the eye. ... It is doubtful, however, whether this art of Pure Design will ever attract or interest the public. (Ross, 1912, p. 81)

Nevertheless, Ross did fervently advocate for the integration of the arts into the American educational system, and he intended for the pedagogical thrust of those classes to be based on universal concepts:

The practice of Pure Design is required as a training for citizenship and I am prepared to say the same thing of Music and of Dancing. We have in Music, Dancing, and Pure Design the best preliminary training that there is for Citizenship— ... The practices of Music, of Dancing and of Pure Design should be introduced, not only in the kindergarten and elementary grades of our schools, but in the higher grades as well; and in colleges and universities. They should be introduced not as amusements. ... They should be regarded as a training and discipline in which success is very difficult to attain but worth attaining, not for its own sake but for its consequences. (Ross, 1912, p. 83)

Ross even goes as far as to rate the study of the arts as being more vital to good citizenship than the study of the social sciences:

It is quite as difficult to attain excellence in the invention, recollection, and performance of the motives of Design as it is to recollect and state accurately and well the facts of History or the Principles of Government or of Economics; and I doubt, very much, whether the ability to state and illustrate these facts and principles is half as helpful, as a preparation for good citizenship, as long

continued and serious efforts in Music, Dancing, and Pure Design. (Ross, 1912, p. 83)

Ross' thoughts on this subject quickly dissolved into a rant, however. He was apparently not at all pleased with how the public schools were running their current arts programs:

The teaching of Music, Dancing, and Pure Design in the Elementary Grades has not been very successful. I admit that, but I see clearly why it has not been successful. There is a lack of intelligence and understanding on the part of the teachers. They don't take the right point of view. They don't see clearly what they are aiming at. There is a lack of definiteness in the instruction which they give and there is nothing like serious discipline in the exercises, as they are generally conducted. It is only as the exercises are really serious, it is only as they mean doing it right, exactly right, and never making a mistake, that they have the value I am describing. ... The practice of Pure Design, as it is conducted in the schools, is, certainly, not serving its purpose as it would if the Theory of Pure Design were better understood and more rigorously followed. (Ross, 1912, p. 86)

This quote is revealing for a number of reasons. In addition to exposing his intolerant attitude toward what he perceived to be the inadequacies of the Boston art classroom, it shows how he viewed his own teaching methods—if one can assume that he met his own standards of excellence—or at the very least it reveals the ideal to which he aspired; his commentary also implies that, although he was apparently unhappy with their implementation, he believed that at least some of his methods were being actively incorporated into the curriculum in the Boston elementary schools.

The lectures Ross delivered placed a great deal of emphasis on the concepts of pure design, as outlined in his books. A final exam from 1908 indicates Ross' expectation that his students should be able to express the tenets of pure design in both theory and practice: "With three lines and four spots, differing in tone, measure and shape, illustrate the idea of occult balance." "Indicate by a few slight drawings the best types of iron-work for window-grilles." "What method should we follow in studying the Art of the Past when our object is to become good judges?" (Ross, 1908).

TRAINING JUDGMENT BY HISTORICAL EXAMPLE

As part of his effort to train his students to “become good judges,” Ross employed the use of an extensive study series³⁹, made up of paintings, sketches, photographs, textiles⁴⁰, ceramics, and texts. The study series marks an important way in which the content of his courses differed from that of his textbooks—in his written work Ross avoided the inclusion of any but abstract arrangements of lines and dots; in the classroom he kept original artworks, a rarity in America at this time, in constant circulation in order to give his students opportunities for analysis. Ross kept the range of objects in the collection intentionally broad and presented them with limited chronological and historical context. He did this to deemphasize any aspects of the artworks' content other than their design qualities⁴¹. Ross referred to this object-oriented method of analysis as the “historical order inverted” (Ross, n.d. b). It was his belief that previous generations of art theorists overemphasized historical context and tended to impose external justifications on its meaning and effect, rather than encouraging a true understanding of the relationship between form and content. For Ross, substance should always follow form, and if it did not, then the fault was in the design:

It is a great mistake to follow the historical order of development. The historical order inverted is far more instructive; it is in seeing the result and effect first and the cause of it afterwards. The cause is what we need to know in estimating the value and importance of the result. When the result is bad the cause is to be avoided. (Ross, n.d. b)

³⁹The study collection was amassed entirely by Ross himself in the course of his travels in Europe, Japan, China, South Asia, and the Middle East; it is now part of the Fogg Museum's permanent collection.

⁴⁰Ross received attention for his textiles in particular. The collection included some 4,000 samples, and apparently of rare quality. Reported by art historian Langdon Warner: “The curator of textiles in Constantinople told us that the Ross examples surpassed his own great collections and that Dr. Ross had been the pioneer of European collectors” (L. Warner, “Denman Waldo Ross, Collector,” 445; in Frank, 2011, p. 189). Ross believed textiles to be a particularly good vehicle for illustrating the principles of pure design. He served on the MFA Boston's Visiting Committee to the textile department from 1907 to 1931.

⁴¹Interestingly, Ross did at times advocate the copying of these artworks, but only as a method of analysis, not as an exercise in imitation.

Each artwork in the study collection was chosen by Ross as an example of the “best of its kind,” to be studied and analyzed according to the principles of “harmony, rhythm, and balance.” In this way, Ross made the study of historical examples an integral part of his curriculum, but for the exclusive purpose of instructing the students' visual knowledge:

He [the artist] must have studied the Principles of Design and fine examples of Design so as to have standards in mind to refer to. He must be sure that he has a visual knowledge of objects, if objects are to be represented, a visual knowledge of the human form if that interests him. Without a visual knowledge of objects he will be unable to draw and paint from his imagination. Unless he can do that he will be unable to rise from the particulars and accidents of vision to a conception of reason in a true idea. (Ross, 1912, p. 5)

Within the study collection, Ross was remarkably egalitarian in his inclusion of different media; he took pains to show how the principles of pure design were just as applicable to the so-called “crafts” as they were to painting:

The only difference between weaving and embroideries and painting is that in painting drawing and coloring we use pigments and pigment mixtures as reflectors [sic] of color in light whereas in textile fabrics and embroideries the threads are dyed and colored and woven or stitched together. That is the only difference between a fine tapestry and an equally fine painting. (Ross, n.d. c)

TRAINING JUDGMENT BY PRACTICING ART

Though his curatorial interest extended to a wide variety of media, oil painting remained Ross' chief pursuit in his own art practice. He was a rather prolific painter, completing hundreds of paintings in his lifetime, as well as an immense assortment of drawings; however, Ross never identified himself as an artist. He considered himself as “a painter who ... used his Art to understand his Art, not to produce works of Art” (Ross, 1907, p. v). He painted in order to discipline his senses and sharpen his understanding of “technical processes and visual images” (Ross, 1907, p. v). He encouraged his students

to do the same; a quotation from Aristotle's *Politics* was included as part of the study series: “It is difficult if not impossible for those who are not performers to be good judges of the performances of others” (Ross, 1907, p. v). It was a thought he reiterated frequently:

The end aim of Art is the attainment of excellence in thinking and in a technical performance. In Painting this excellence is only partly exhibited in the final result and effect. Good painting means good thinking followed by right actions in the process and progress of the work, from the beginning of it to the end of it. Of this no one is likely to be a judge who has had no experience, no practice; who cannot, seeing the result, understand how it was produced. (Ross, 1912, p. 3)

In fact, Ross in his writing referred to painting, not as an art, but as a “practice.” It was the exercise of judgment and the practice of art that ultimately led to knowledge (Ross, 1912). Knowledge was imperative for true expression on the part of the artist, and good citizenship on the part of the public.

HARVARD COURSE—STUDENTS

In addition to teaching design during the regular school year, Ross taught summer school classes at Harvard from 1899 to 1914⁴². These summer classes were open to non-matriculated students and consequently helped Ross to connect with practicing teachers from wide-reaching parts of the United States. The course title varied slightly from year to year, but the content stayed basically the same. In 1900 it was called “Theory of Design: Lectures, with Experimental Practice, for Designers, for Teachers of Design, and For Teachers of the History of Art,” a title which revealed who he intended to teach and what he purposed to teach them. In addition to the aforementioned course, he occasionally taught “Drawing and Painting in Representation” at the summer school, as

⁴²He taught the course every summer with one exception: in 1907, he took the summer off to travel.

well as a design class for Harvard's "Afternoon and Saturday Courses for Teachers." Ross' classes were well attended, attracting from fifty to ninety students in any given year (Harvard University Catalogues, 1899-1908; Harvard University Faculty of Arts and Sciences, Final Returns, 1909-1914).

Most of Ross' students were, understandably, closely connected with the world of art education and included educators from the elementary to the college level, textbook writers, administrators, and artists. Many came from a considerable distance. It was claimed in Ross' obituary that "men and women flocked from all over the country to attend his courses in the Summer School, and they carried back what they could of his teaching to their own communities" (Forbes, Chase, & Warner, 1935, p. 92). Class lists recorded students from Ohio, New York, Maine, New Hampshire, New Jersey, Connecticut, Missouri, Michigan, Illinois, Pennsylvania, Indiana, Louisiana, Nebraska, California, and Wisconsin (Harvard University Catalogues, 1899-1908; Harvard University Faculty of Arts and Sciences, Final Returns, 1909-1914). Many of these students were listed as "supervisors" and teachers at Normal Arts schools, and so likely would have disseminated Ross' ideas to an increasing number of teachers.

Many of Ross' students were prominent in the art education community. Alfred Vance Churchill and James Parton Haney, both of Columbia Teachers College, attended. John Spencer Clark, who co-wrote the *Prang Text Books of Art Education* in the 1880s and '90s signed up for the class multiple times (Harvard University Catalogues, 1899-1908; Harvard University Faculty of Arts and Sciences, Final Returns, 1909-1914). A number of other Prang employees attended as well. Ross is mentioned in the acknowledgments of the Prang Educational Company's 1905 edition, where he is thanked "for the use of his Theory of Tone Relations and for the adaptation of his principles of arrangement—Balance, Rhythm, and Harmony—in the subject of Design" (Froelich, H.,

& Snow, B.M., 1905, p. ii). Walter Sargent, Henry Turner Bailey's successor as the Massachusetts State Supervisor of Drawing and Director of Drawing and Manual Training for the city of Boston, attended Ross' class in 1901, and was an avid follower of his methods. Sargent's art education textbook, *The Enjoyment and Use of Color* (1923), intended for use in secondary schools and colleges, relied on Ross' notation system for a scale of values (pp. 12-13) and included several references and quotations to Ross' published work. Sargent left Massachusetts for Illinois in 1909, where he preceded John Dewey as professor of art at the University of Chicago. Ernest Batchelder appeared on the 1900 roster for Ross' summer course, when he was serving as supervisor of drawing for public schools in Adams, Massachusetts. Again, in 1903, Batchelder appeared on the roster of Ross' course when he was an instructor at Throop Polytechnic Institute in Pasadena, California. Batchelder is known now mostly for his involvement in the arts and crafts movement and for his art tiles, but he also wrote two textbooks, *The Principles of Design* (1906), and *Design in Theory and Practice* (1910), the latter of which went through seven reprintings by 1927. Both of Batchelder's books mention Ross specifically, and show indebtedness to his theories. In the preface to *The Principles of Design* (1906), he wrote:

I do not lay claim to the originality of thought in the theory of design presented. Those who are familiar with the work done at Harvard University under the guidance of Dr. Denman W. Ross will recognize at once a development from his ideas. It was my privilege to be associated with Dr. Ross as instructor at the Harvard Summer School of Design in 1901. It is from this association that I date my present interest and enthusiasm in the theory and practice of design. (p. i)

Henry Turner Bailey, Massachusetts State Supervisor for Drawing, whose connection with Ross is explored by Stankiewicz (1992), took Ross' course in 1901, after which time the two met frequently to discuss issues of art education and design. After becoming editor of *School Arts Book*, Bailey frequently promoted Ross' and other similar

methods in the magazine. In a review of educational opportunities, Bailey (1903) wrote that “a summer spent in Cambridge with Dr. Denman W. Ross is an experience one can hardly afford to miss ... one find[s] the most thorough and scholarly instruction, enriched by the finest obtainable examples of artistic achievement” (p. 336). In an editorial on the use of color, Bailey wrote:

Foremost among students of this problem of fine coloring stands Dr. Denman W. Ross, a man of thoroly [sic] trained mind, unusually sensitive to beauty, whose devotion to the subject has been proven by years of patient investigation and daily personal practice to test every theory. His book, *A Theory of Pure Design*, a book not to be read but to be studied, is by far the most valuable document we have dealing with the theory of coloring. (Bailey, 1910, p. 186)

In 1908 *The School Arts Book* also advertised a short course based specifically on Ross’ teachings, confirming that his ideas were being proliferated beyond his own classes:

Mr. Edgar O. Parker, Craigie St., Cambridge, Mass., has again consented to teach classes in Pure Design, by correspondence, using Dr. Ross’ new book as a textbook. Fee, \$20.00 for a course covering the same ground as covered by the summer classes at Harvard University. Mr. Parker knows how to teach, and has something worth teaching. His students will get their money's worth. (Bailey, 1908, p. 71)

Ross’ presence in *The School Arts Book*, as well as other publications, such as *Applied Arts Book*, was strongest in the early 1900s. By the '30s, the teachings of John Dewey had overtaken formalism as the method of choice among teachers and theorists. Ross continued to hold fast to his own ideas, however. He continued to teach design at Harvard until 1932, and in 1935, only months before his death, he published an article in the journal of the Fogg Art Museum titled “On Drawing,” again laying out the fundamentals of pure design. His obituary, written by colleagues, characterized Ross as a figure of depth and influence to a generation of scholars:

His generation saw the Fine Arts in America emerge from neglect to the respect that they have begun to command, and he had a leading part in that movement. ...

To quote one of the best known connoisseurs of art today, “He was in our field the most 'dynamic' American of our time, his influence of incalculable range and depth.” (Forbes, Chase, & Warner, 1935, p. 92)

SUMMARY

In his day, Ross wielded significant influence, both as an art educator and as a member of the Boston elite. His lectures at Harvard disseminated the ideas outlined in his books. He taught that appreciation of good design was not only accessible, but necessary in order for a society to flourish, and he offered pure design as the ideal method for achieving such a goal. His summer course was attended by art educators from around the United States and connected him to influential writers and administrators. This, in addition to his numerous publications outlining his teachings on design, brought his ideas to a broad and influential audience.

Chapter 7: Conclusion

With this research I sought to accomplish a concise task: to clarify the contributions made by Denman Waldo Ross to the field of art education, and in so doing to provide the field with a more complete understanding of the theoretical roots of the elements and principles of design. To this end, I first examined the pedagogical trends that preceded Ross' theory of pure design (Chapter 4). Chapter 5 moved on to investigate Ross' ideas about science and his attempts to incorporate those ideas into his work. Chapter 6 presented an account of Ross' Harvard classes as well as a mention and discussion of his students, many of whom were art teachers themselves. This concluding chapter revisits the original goals of the study, and reflects on its findings and implications.

SUMMARY OF FINDINGS

In completing this historical investigation, the most meaningful part of the process was the consultation and incorporation of archival materials. By reviewing Ross' considerable store of personal papers, I was able to formulate a clearer idea of his life and work without the intervening interpretation of a third party. I also consulted the current scholarship on Ross, but because this study was intended primarily as an exposition of his teachings, I made every attempt to focus my analysis on the copious primary sources provided by the subject himself.

This research revealed the relevance of Ross' theory at the time of its creation, and the impact it had on the greater art education community. Ross developed his theory of pure design in response to a need within the field of art education for a comprehensive method of instruction that could address the various styles and purposes developing in art

and industry at the turn of the twentieth century. He also incorporated science into his methods at a time when the notion of science was gaining public awareness and esteem. To this end, he made every attempt to employ objective methods and a formalist vocabulary. His textbooks included no ornamental or historical examples of design; they remained strictly explanatory, consisting of lines, dots, and diagrammatic notations. In his writing he strove for an authoritative, analytic tone, focusing on definitions of words and explications of processes. Ross was not himself schooled in the more rigorous aspects of science and mathematics, and at times his analytic methods of design theory fall flat, due to this lack of expertise in those areas. However, his main audience was not the scientific community. In conducting this study I found that Ross taught a number of art educators in his summer courses at Harvard, several of whom were or became influential professors, writers, and public figures. Thus, his work cannot be dismissed as irrelevant and obscure to the development of formalist methods, i.e., the elements and principles of design, within the field art education. He championed the importance of design theory and practice to a wide variety of artists, art educators, and architects, and his influence on these fields is worth further investigation.

RECOMMENDATIONS FOR FUTURE RESEARCH

This research, if considered along with the work of Marie Frank, Mary Ann Stankiewicz, and others, sets a strong precedent establishing Denman Ross' role in the history of art education. There is much work that remains, however, in order to fully solidify his standing as one of the key contributors to formalist methods in the American system. There are many topics that were only touched on in this study which, if pursued, would go far toward demonstrating Ross' influence on art education and design theory.

Ross taught hundreds of art educators in his summer school course. A study tracing the careers of his students—where they taught, what curricula and assignments they used in their classes—would strengthen the argument that Ross’ methods were employed in classrooms across the country. Several of Ross’ students also went on to publish articles in art education journals or contribute to standard textbooks.

Several aspects of Ross’ story beyond his teaching and writing would be of interest to those researching American social mores at the turn of the twentieth century. Ross was an art connoisseur and collector, a world traveler, and a generous museum patron. In many ways he typifies the urbane, emotionally detached gentleman-scholar of the early modern period.

Ross identified himself primarily as an educator, yet he was also an avid art collector, highly regarded for his impeccable taste. Drawing on his considerable personal fortune, Ross began traveling abroad to collect art in the 1870s and ‘80s. He eventually donated more than 16,000 objects to the Museum of Fine Arts, Boston, the Fogg Museum, Columbia University, and other educational institutions. His connection with the Museum of Fine Arts, Boston ran deep. He served as a trustee overseeing museum acquisitions, exhibitions, and policies, and was also involved with the museum's school, to which he donated money and delivered occasional lectures. Ross also supported universal free admission to museums, a forward-thinking notion for the time.

An examination of Ross’ life from a more personal perspective would offer insights into not only the man himself, but also attitudes and habits of the individuals and groups that made up the Boston elite at the turn of the twentieth century. Born in Cincinnati, Ohio, the only surviving child of four, Ross moved with his family to Boston in 1860, where they hoped they could avoid the immediate dangers of the Civil War. Ross’ mother was of the illustrious Waldo family of Boston, whose members included

Ralph Waldo Emerson, among other highly successful intellectuals and businessmen. Ross was educated at a preparatory school and by private tutors, never attending public school. He entered Harvard as a matter of course, a university education being requisite for the sons of upper-class New England parents. As an adult, Ross appears to have carried on his private life much as he did his public and professional life—fastidiously and rationally. Judging from his notes and the comments of other scholars (Frank, 2011; Stoneley, 2014), he appears to have been homosexual, but he gave no indication, publicly or privately, of any romantic relationships with either sex. His travels to such far-flung places as India and South America did not take him on adventures, in any dramatic sense of the word; for Ross they were research trips, opportunities for him to collect art and information for the all-consuming purpose of augmenting his knowledge of design.

From this perspective, Ross may seem to be a straightforward, simplistic character, but a look still deeper into Ross' interior life reveals a frustrated idealist, a man whose strict standards of beauty and order were often disappointed by the unpredictability and untidiness of life. He tended to blame this state of affairs on an ignorant and undisciplined public:

If the majority goes right, we rejoice, but if it goes wrong the situation is perfectly hopeless. There is nothing to be done. Assassination is not to be thought of. Education is impossible. Your majority is dead long before you can educate it and there is another one quite as ignorant in its place. In the mean time the educator is dead. The majority dies but it is never dead. It goes on forever and forever, always ignorant and always irresponsible. (Ross, 1912, pp. 26-27)

Ross was so struck by this idea that he made the point twice in *On Drawing and Painting* (1912), this time implicating his own doomed attempt to educate the masses:

The expert, the only man who knows what to do and how to do it, is generally outvoted and turned down. In order to accomplish anything he must stop work and become a teacher. He must educate the public. That is the thing to do, of course; but long before the public is educated it passes away and another public

takes its place as ignorant as the first. In the mean time the expert and teacher dies. (p. 16)

This disdain Ross harbored for the uncultured public is rooted in Victorian upper-class elitism. A writer interested in this or related subjects would find a good deal of material in Ross' writings. In attempting to understand Ross and his work, one may come to a deeper and more nuanced understanding of the place and time in which he lived.

FINAL THOUGHTS

No thoughtful discussion of formalism in art education would be complete without an acknowledgment of its historical roots. Denman Waldo Ross played a critical role in the formation of the field through his ardent belief that art creation could be studied and taught in a systematic way, and through his advancement of that argument by his own teaching and writing. Whether or not one values Ross' efforts to dissect the design process, it must be admitted that his work extended the conversation around "design" beyond industrial, ornamental, and representational applications to accommodate abstract and non-representational art, a vital change in the modern era.

But we no longer live in the modern era. Ross formed his theories at a time when reason and scientific knowledge seemed to hold out the promise of rational improvement in all aspects of life. But belief in the linear progression of history—the idea that art, or indeed society itself, is moving ever forward toward a better, more enlightened future—has been overturned by the tide of postmodernism. As a society, and as a discipline, we have moved from universalism to pluralism, and tidy taxonomies meant to categorize all the things that a work of art can be or contain may now seem at best naive and at worst oppressive. Beauty and order are no longer the singular goal of the artist and critic. It is

proper that art educators should continue to question whether the elements and principles of design, or indeed any formalist methods, are relevant to the way we now think about and teach art.

I will close with a thought from *A Theory of Pure Design* (1907):

The purpose of what is called art-teaching should be production, not of objects, but of faculties,—the faculties which being exercised will produce objects of Art, naturally, inevitably. (p. 193)

I think we would do well to keep this idea in mind as we continue to gather perspective on the theory and practice of art education, now and in the future.

Appendix: Timeline

- 1853 Ross is born
 - Japan opens to trade
- 1857 NEA is established
- 1860 Ross family moves from Cincinnati to Boston
 - Lincoln is elected President of the United States
- 1861 Confederate States of America is established
- 1865 American Civil War ends
- 1866 Ross goes on his first European tour
- 1869 Charles William Eliot is inaugurated president of Harvard
- 1870 Harvard begins offering graduate programs
 - Massachusetts Drawing Act mandates art instruction in public schools
 - MFA Boston is founded
- 1871 Ruskin School of Drawing opens at Oxford
- 1871 Walter Smith becomes director of Art Education in Massachusetts state schools
- 1872 The Metropolitan Museum of Art opens
- 1873 Charles Eliot Norton is named “lecturer of the history of fine arts as connected with literature” at Harvard
- 1874 Massachusetts Normal Art School is established
- 1875 Ross graduates *summa cum laude* from Harvard
 - Prang publishes first textbook, written by Walter Smith
- 1876 Ross registers for graduate school at Harvard
 - MFA Boston is opened to the public

- Centennial Exposition is held in Philadelphia
- 1880 Ross completes his Ph.D. at Harvard
- 1883 Ross publishes his dissertation, *The Early History of Land-Holding Among the Germans*
- NEA establishes a Department of Art
- 1885 Ross is elected to the Academy of Arts and Sciences
- 1888 Ross is elected to Boston Society of Architects
- Kodak personal camera is made available in stores
- Milton Bradley publishes "Color in the Kindergarten," introducing color theory to students
- 1893 First color portrait is produced using Gabriel Lippman's photochrome
- 1896 Laboratory School is established at Univ. of Chicago by John Dewey
- 1897 James Hall publishes "With Brush and Pen," advocating creativity and self expression in art
- 1899 Ross secures position as lecturer in Design in Harvard's Department of Architecture
- Arthur Wesley Dow publishes *Composition*
- Ross begins to teach at Harvard's summer school
- 1901 Ross publishes his first article on design
- 1907 Ross publishes *A Theory of Pure Design: Harmony, Balance, Rhythm*
- 1909 Ross moves to the Fine Arts Department at Harvard
- 1912 Ross publishes *On Drawing and Painting*
- Stieglitz opens an exhibition of children's art at Gallery 291
- 1913 Armory Show

Stanton Macdonald-Wright and Morgan Russell begin to promote
“synchromism”

1915 Heinrich Wolfflin publishes *The Principles of Art History*

1917 United States enters WWI

1919 Ross publishes *The Painter's Palette*

Treaty of Versailles is ratified, ending WWI

Progressive Education Association is established

Bauhaus School is founded in Weimar

1920 Florence Cane introduces “scribble technique”

1929 The Museum of Modern Art is opened

1933 Owatonna Project studies begin

1935 Ross dies

1939 Germany invades Poland, beginning WWII

References

- Ackerman, J.S. (1991). *Essays in theory and Renaissance art and architecture*. Cambridge, MA: The MIT Press.
- Bailey, H.T. (1903). Editorial. *The School Arts Book*, 3, 336.
- Bailey, H.T. (1908). Notes. *The School Arts Book*, 7, 71.
- Bailey, H.T. (1910). Editorial. *The School Arts Book*, 10, 186.
- Batchelder, E. (1904). *The principles of design*. Chicago, IL: The Inland Printer Company.
- Batchelder, E. (1910). *Design in theory and practice*. New York, NY: The Macmillan Company.
- Battiata, M.L. (2014). *Elements of influence: Composition and the students of Arthur Wesley Dow*. (Doctoral dissertation). Retrieved from ProQuest dissertations and theses. (1556685)
- Bolin, P.E. (1990). The Massachusetts Drawing Act of 1870: Industrial mandate or democratic maneuver? In D. Soucy & M.A. Stankiewicz (Eds.), *Framing the Past: Essays on art education* (pp. 58–68). Reston, VA: National Art Education Association.
- Bookbinder, J. A. (1998). *Figurative expressionism in Boston and its Germanic cultural affinities: An alternative modernist discourse on art and identity*. (Doctoral dissertation). Retrieved from ProQuest dissertations and theses. (9823222)
- Colman, S. (1912). *Nature's harmonic unity: A treatise on its relation to proportional form*. New York, NY: The Knickerbocker Press.
- Dow, A.W. (1899). *Composition: A series of exercises in art structure for the use of students and teachers*. New York, NY: Baker and Taylor.
- Dow, A.W. (1908). *Theory and practice of teaching Art*. New York, NY: Columbia University Press.
- Efland, A. (1990). *A history of art education*. New York, NY: Teachers College Press
- Efland, A., Freedman, K., & Stuhr, P. (1994). *Postmodern art education: An approach to curriculum*. Reston, VA: National Art Education Association.
- Forbes, E. Chase, G., & Warner, L. (1936). Denman Waldo Ross. *Harvard University Gazette*, 92-93.
- Frank, M. A. (1996). *The theory of pure design and American architectural education in the early twentieth century*. (Doctoral dissertation). Retrieved from ProQuest dissertations and theses. (9701312)

- Frank, M. A. (2011). *Denman Ross and American design theory*. Lebanon, NH: University Press of New England.
- Froelich, H., & Snow, B.M. (1905). *Text books of art education*. (Vol. VI). New York, NY: The Prang Educational Company.
- Gude, O. (2007). Principles of possibility: Considerations for a 21st century art & culture curriculum. *Art Education: The Journal of the National Art Education Association*, 60(1) 6-17.
- Hambidge, J. (1920). *Dynamic symmetry: The Greek vase*. New Haven, CT: Yale University Press.
- Hopkinson, C. (1937). Denman Waldo Ross. *Proceedings of the American Academy of Arts and Sciences*, 71(10), 343-46.
- Jaffee, B. (1999). *The abstraction within: Diagrammatic impulses in twentieth century American art, pedagogy, and art history*. (Doctoral dissertation). Retrieved from ProQuest dissertations and theses. (9951801)
- Jaffee, B. (2005). Before the new Bauhaus: From industrial drawing to art and design education in Chicago. *Massachusetts Institute of Technology Design Issues*, 21(1), 41-62.
- Johnson, A. (1934). *Arthur Wesley Dow, historian, artist, teacher*. Ipswich, MA: Ipswich Historical Society.
- Jones, O. (1856). *The grammar of ornament*. London: Day and Son.
- Maratta, H. (1909). The Maratta system of color: Painting on a scientific basis, *Scientific American*, 1767, 311.
- McGee, W.J. (1898). Fifty years of American science. *The Atlantic Monthly*, 491, 307-320.
- Mock-Morgan, M. E. (1976). *A historical study of the theories and methodology of Arthur Wesley Dow and their contribution to teacher-training in art education*. (Doctoral dissertation). Retrieved from ProQuest dissertations and theses. (7709514)
- Moffat, F.C. (1977). *Arthur Wesley Dow (1857-1922)*. Washington, DC: Smithsonian Institution.
- Munsell, A.H. (1905). *A color notation*. Boston, MA: G.H. Ellis Company.
- Münsterberg, H. (1905). *Principles in art education*. New York, NY: Prang Educational Company.
- Pasquine, R. (2000). *The politics of redemption: Dynamic symmetry, theosophy, and swedenborgianism in the art of Emil Bisttram (1895-1976)*. (Doctoral dissertation). Retrieved from ProQuest dissertations and theses. (9969715)

- Ross, D.W. (1883a). *Early history of land-holding among the Germans*. London: Trübner & Co., Ludgate Hill.
- Ross, D.W. (1883b). [Travel diary, Granada]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 113), Cambridge, MA.
- Ross, D.W. (ca 1890). [Travel diary, Egypt]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 112), Cambridge, MA.
- Ross, D.W. (1900). *Illustrations of balance and rhythm for the use of students and teachers*. Boston, MA: W.B. Clarke Company.
- Ross, D.W. (1901). Design as a science. *Proceedings of the American Academy of Arts and Sciences*, 36(21), 357-74.
- Ross, D.W. (1903). [Address on design: Its importance in life]. Harvard University Archives (Denman W. Ross Materials, ca 1900-1920s, HUG 1753.481), Cambridge, MA.
- Ross, D.W. (1907). *A theory of pure design*. Boston, MA and New York, NY: Houghton, Mifflin and Company.
- Ross, D.W. (1908). [Copy of final exam]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 39), Cambridge, MA.
- Ross, D.W. (1912). *On drawing and painting*. Boston, MA and New York, NY: Houghton, Mifflin and Company.
- Ross, D. W. (1919). *The painters' palette*. Boston, MA and New York, NY: Houghton, Mifflin and Company.
- Ross, D.W. (1922, December 2). [Notes for a talk at the Boston art club]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 39), Cambridge, MA.
- Ross, D.W. (1923). *Experiments in Drawing and Painting* [Exhibition]. New York, NY: Century Association of New York.
- Ross, D.W. (1927, January). [Imaginative drawing]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 37), Cambridge, MA.
- Ross, D.W. (n.d. a). [Autobiographical notes]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 37), Cambridge, MA.
- Ross, D.W. (n.d. b). [Design]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 38), Cambridge, MA.
- Ross, D.W. (n.d. c). [On the practice of drawing and painting]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 37), Cambridge, MA.

- Ross, D.W. (n.d. d). [Paper presented to professor Sachs' class in the Harvard Summer School August 10, 1927]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 39), Cambridge, MA.
- Ross, D.W. (n.d. e). [Travel diary, Venice]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 112), Cambridge, MA.
- Ross, D.W. (n.d. f). [The scientific study, typescript]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 37), Cambridge, MA.
- Ross, D.W. (n.d. g). [Untitled typescript, beginning "Your visual interests"]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 37), Cambridge, MA.
- Ross, D.W. (n.d. h). [Untitled typescript, beginning "In drawing from the imagination"]. Harvard Art Museum Archives (Denman W. Ross Materials, ca 1900-1920s, Folio Box 37), Cambridge, MA.
- Ruskin, J. (1857). *The elements of drawing; In three letters to beginners*. London: Smith, Elder and Co.
- Ruskin, J. (1908). *Selections from the works of John Ruskin*. C. B. Tinker (Ed.). Cambridge, MA: Riverside Press.
- Santayana, G. (1896). *The sense of beauty: Being the outline of aesthetic theory*. New York, NY: Charles Scribner's Sons.
- Sargent, W. (1923). *The enjoyment and use of color*. New York, NY: Charles Scribner's Sons.
- Smith, W. (1875). *Industrial art education: A lecture*. Boston, MA: L Prang and Company.
- Soper, M.B. (1915). *Principles and practice of elementary drawing*. Chicago, IL: Scott, Foresman and Company.
- Stankiewicz, M.A. (1990). *Rules and invention: From ornament to design in art education*. In D. Soucy & M.A. Stankiewicz (Eds.), *Framing the past: Essays on art education* (pp. 89-101). Reston, VA: National Art Education Association.
- Stankiewicz, M.A. (1992). From the aesthetic movement to the arts and crafts movement. *Studies in Art Education*, 33(3) 165-173.
- Stoneley, P. (2014). Young men and the Symmetrical Life. *The New England Quarterly*, 87(2), 192-227.
- Walkup, N. (2001). Arthur Wesley Dow: The father of foundations. *School Arts*, 101(1), 23.
- Warner, L. (1936). Denman Waldo Ross, collector. *Harvard Alumni Bulletin*. 444-45.